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# USSR Report

AGRICULTURE

No. 1240



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2 July 1980

## USSR REPORT AGRICULTURE

No. 1240

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### SHORTCOMINGS IN SUGAR BEET GROWING, SUGAR INDUSTRY NOTED

Moscow SAKHARNAYA PROMYSHLENNOST' in Russian No 5, May 80 pp 2-6

/Article by G. D. Shevchenko, Main Administration of the Sugar Industry:  
"More Sugar Beets--More Sugar"/

/Text/ Our country has confidently entered the concluding year of the 10th Five-Year Plan, the year of active preparation for the 26th CPSU Congress.

The results of the past 4 years convincingly attest to the systematic implementation of the economic and social policy of the party worked out by the 25th CPSU Congress. During those years our country advanced significantly in the development of the national economy and in the rise of the material and cultural standard of living of the Soviet people.

The decree of the CPSU Central Committee "On Further Improving Ideological and Political-Educational Work," the decree of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality" and the decree of the CPSU Central Committee, the Presidium of the USSR Supreme Soviet, the USSR Council of Ministers and the All-Union Central Trade Union Council "On Further Strengthening Labor Discipline and Reducing Personnel Turnover in the National Economy" were events of tremendous importance. These documents were warmly approved by all our people.

Solving the problems outlined by these decrees, the workers of our homeland will take a new step in raising the level of political-educational work, production efficiency and work quality and in strengthening labor discipline.

The decisions of the November (1979) Plenum of the CPSU Central Committee and the principles and conclusions presented at it in Comrade L. I. Brezhnev's speech have become the program of action of party organizations and all workers in our country.

The party and the government set important tasks for all national economic sectors, including for sugar beet growers and sugar industry workers, for 1980.

The Basic Trends in the Development of the National Economy of the USSR for 1976-1980 approved by the 25th Congress envisaged increasing the average annual production of sugar beets to 95-98 million tons and raising their yield and sugar content.

In the last few years significant qualitative changes have taken place in sugar beet growing. Essentially, a fundamental technical retooling of sugar beet growing has been carried out. By the end of the 10th Five-Year Plan sugar beet planting farms will receive 32 percent more sugar beet drills, 64 percent more cultivators, 51 percent more sugar beet harvesting machines and 22 percent more sugar beet loaders than during the preceding five-year plan.

The need of sugar beet crops for mineral fertilizers is met fully. The dose of their application per hectare throughout the country more than doubled as compared with 1965.

The strengthening of the material and technical base of sugar beet planting farms and the increased skills of sugar beet growers contributed to an increase in the production and purchases of sugar beets.

Whereas during the Ninth Five-Year Plan average annual purchases totaled 67.9 million tons of sugar beets, during 4 years of the 10th Five-Year Plan, on the average, 79.8 million tons, or 11.9 million tons more, were purchased annually.

However, the volume of purchases of raw sugar beet materials was lower than envisaged by the annual plans and their quality did not improve.

In 1976-1979, while the purchase plan called for an average of 88.4 million tons annually, in fact, as already indicated, 79.8 million tons were purchased.

A significant underfulfillment of the plan for the purchases of sugar beets took place in sugar beet planting oblasts of the Russian Federation. In 1979 a total of 17.9 million tons of sugar beets, or 58.5 percent of the plan, were sold by sugar beet planting farms in the R&FSR and during 4 years of the 10th Five-Year Plan they failed to sell 29 million tons of raw sugar beet materials. Farms in Orlovskaya, Tambovskaya, Kurskaya, Lipetskaya, Tul'skaya, Penzenskaya and Saratovskaya oblasts have not fulfilled the plan for purchases of sugar beets during all the years of the five-year plan. Last year the plan for the sale of sugar beets in Orlovskaya Oblast was fulfilled 37 percent, in Tambovskaya Oblast, 47 percent, in Penzenskaya Oblast, 58 percent, in Tul'skaya Oblast, 50 percent, in Lipetskaya Oblast, 54 percent and in Kurskaya Oblast, 56 percent.

Sugar beet growers in the Moldavian SSR, the Latvian SSR and some oblasts of the Ukrainian SSR did not cope with the fulfillment of the plan for purchases of sugar beets. For example, sugar beet planting farms in Volynskaya Oblast fulfilled the purchase plan by 63 percent, in Chernovitskaya Oblast, by 77 percent, in Rovenskaya Oblast, by 78 percent, in Poltavskaya Oblast, by 84 percent and in Vinnitskaya Oblast, by 91 percent.

Of course, the unfavorable weather conditions during the period of planting and harvesting work in 1979 lowered the results of labor of many sugar beet growers. However, the practical experience of advanced farms in the production of sugar beets showed that, where the standard of sugar beet growing was high and where the labor of machine operators and other workers on sugar beet planting fields was well organized, the difficulties caused by unfavorable weather conditions were overcome and farms obtained rich harvests and overfulfilled the plan for the sale of sugar beets to the state. For example, the Kolkhoz imeni Kirov in Buturlinovskiy Rayon in Voronezhskaya Oblast obtained 328 quintals of sugar beet roots on an area of 520 hectares and the neighboring Rodina Kolkhoz, only 132 quintals per hectare. The Kolkhoz imeni Lenin in Rakityanskiy Rayon in Belgorodskaya Oblast gathered 271 quintals per hectare, which was 161 quintals per hectare more than the amount obtained on the neighboring Kolkhoz imeni Krupskaya. The Rossiya Kolkhoz in Ryl'skiy Rayon in Kurskaya Oblast obtained 281 quintals per hectare more and its neighbor--the Kolkhoz imeni Michurin--only 88 quintals per hectare, or 193 quintals per hectare less.

The Kolkhoz imeni K. Marx in Dobrinskiy Rayon in Lipetskaya Oblast annually obtains 250 quintals per hectare and more and the Sovetskaya Rossiya Kolkhoz located next to it, only about 100 quintals of sugar beets per hectare with the same planting area--700 hectares.

Similar examples can be cited for every sugar beet planting oblast, kray and autonomous republic. The task of sugar industry workers lies in studying the experience of advanced farms and in helping lagging sugar beet planting farms to more rapidly introduce it into their production.

The periods of performance of work on the care of plants and harvesting have a great effect on the yield and quality of sugar beets.

On many farms in the Mordovskaya ASSR and in Ryazanskaya, Orlovskaya, Lipetskaya, Penzenskaya, Tambovskaya, Kurskaya and a number of other oblasts last year the density of sugar beet plants was formed during more than 25 days, whereas this work, which is of great importance for plant growth, should be completed in 10 to 12 days.

The harvesting of sugar beets in a number of sugar beet planting regions in the Russian Federation, the Ukraine and Moldavia began somewhat later than the dates determined by the schedule for these operations. The completion of sugar beet digging was delayed until the middle of November and the carting of roots to sugar beet receiving centers, until 20 December.

As a rule, the dug up sugar beets were not carted out from the fields on time. Sugar beets, being in small uncovered heaps, dried up at the high temperatures in September and froze and thawed out in October-November. As a result, they lost not only their mass, but technological qualities as well. In some oblasts during the mass harvesting period the amount of uncarted sugar beets reached 70 percent of the dug up beets. For example, on farms in Voronezhskaya Oblast on 24 September 1979 the remainder of sugar beets not carted out from the fields reached 800,000 tons, or 48 percent of the dug up beets, in Kurskaya Oblast, 790,000 tons and 60 percent, in Tambovskaya Oblast, 424,000 tons and 59 percent, in the Tatarskaya ASSR, 340,000 tons and 70 percent, in Khar'kovskaya Oblast, 350,000 tons and 29 percent and in Sumskaya Oblast, 270,000 tons and 32 percent respectively. There were large remainders of uncarted sugar beets on 1 November.

Nonobservance of the agricultural techniques of sugar beet cultivation, as well as of the schedules of harvesting and carting out of roots, led to great losses of raw sugar beet materials on many sugar beet planting farms directly on plantations.

The daily arrival during the first half of September of unripe, dried up and then, with the arrival of frost, frozen sugar beets at many sugar plants greatly exceeded their daily processing productivity. Many sugar beet centers were forced to place some of these sugar beets in clamps for storage. From 1 through 17 October sugar plants received more than 7 million tons of sugar beets with an admixture of frozen roots. Such sugar beets arrived at receiving centers without a preliminary sorting in the field. Even during short periods of storage in clamps foci of self-warming and affection of sugar beets with bacterial wilt appeared. The arrival of frozen sugar beets and root crops up to 20 or 25 percent mechanically damaged owing to structural shortcomings of sugar beet harvesting equipment and its poor adjustment during the sugar beet harvesting period contributed to the above.

It should be noted that many sugar plants were unprepared for the acceptance, storage and processing of such sugar beets. At sugar beet receiving centers ventilation units for lowering the temperature in clamps did not operate efficiently and there were not sufficient covering materials.

On the average, the associations and sugar plants of the RSFSR Ministry of Food Industry fulfilled the assignment for the purchase of covering materials by 18 percent, including the Tambov Association, by 3 percent, the Kursk Association, by 4 percent and the Voronezh Association, by 24 percent. The sugar plants of the Moldavian SSR fulfilled the assignment by 20 percent and in the Ukrainian SSR the sugar plants of the Kirovograd Association, by 27 percent and of the Odessa Association, by 39 percent.

A considerable number of sugar plants in the RSFSR operated at a lowered productivity in the second half year, as a result of which the length of production increased, which means that sugar beets had to be stored for a longer time.

For example, on the average, the productivity in sugar beet processing at the enterprises of the Privolzhsk Association in the second half year comprised 75.2 percent, of the Altay Association, 77.0 percent, of the Orlov Association, 89.6 percent, of the Tul'sk Association, 94.4 percent, of the Kursk Association, 95.0 percent and of the Belgorod Association, 96.6 percent of the established norm.

The existence of major shortcomings in sugar beet harvesting, as well as in the organization of storage, led to significant losses of raw materials and sugar at the sugar beet receiving centers of the sugar industry.

There were especially great losses of sugar beets at the sugar plants of the Altay Association, where they comprised 9.3 percent of the purchased amount. At the Cheremnovskiy Sugar Plant of this association they comprised 11.6 percent, at the plants of the Kursk Association, 6.56 percent and of the Privolzhsk Association, 6.2 percent and at the Kamensk Plant of this association, 9.1 percent. At the enterprises of the Vinnitsa Association there were above-plan losses amounting to 105,000 tons, including at the Bershad' Sugar Plant, 3,100 tons (10.5 percent), at the Derebchinskii Sugar Plant, 9,200 tons (5.03 percent), at the Krasnosel'sk Sugar Plant, 86,000 tons (4.62 percent), at the Sokolovo Sugar Plant, 9,000 tons (4.5 percent) and at the Tomashpol' Sugar Plant, 8,000 tons (4.1 percent).

The workers of sugar plants, associations and administrations of the sugar industry should carefully analyze the results of the acceptance, storage and processing of sugar beets at every enterprise and implement measures to improve the organization of the acceptance, storage and processing of the sugar beets of the new harvest.

A major task--to purchase more than 91 million tons of sugar beets and to produce 8,996,000 tons of sugar from them in the second half year--was set for sugar industry workers in 1980, the concluding year of the 10th Five-Year Plan. Sugar beet growers and sugar industry workers never produced such an amount of sugar beets and sugar from them.

The labor cooperation between sugar beet growers and sugar industry workers from the first days of planting until the end of sugar beet harvesting should be directed toward obtaining high final results of their work--maximum output of white sugar per hectare of sugar beet growing field.

Now, when sugar beet crops are being cultivated in the main sugar beet planting regions, all efforts must be concentrated on obtaining the optimum density of sugar beet plants on every section of their planting area.

Last year at the beginning of the harvest period the density of sugar beet plants throughout the country was 72,000 roots per hectare, in the RSFSR, 63,000, in the Moldavian SSR, 76,000, in the Kazakh SSR, 71,000, in the Kirgiz SSR, 73,000, in the Lithuanian SSR, 58,000 and in the Latvian SSR, 60,000 plants per hectare.

The plant density in Ryazanskaya Oblast was 55,000 roots and in Orlovskaya and Lipetskaya oblasts and in the Mordovskaya ASSR, 52,000 roots per hectare.

To be sure, this had a negative effect on the yield and sugar content of sugar beets.

Scientific research shows that 90,000 to 100,000 uniformly placed plants per hectare are the optimum density on sugar beet planting farms located in a zone of sufficient moisture, 85,000 to 90,000, in regions of unstable moisture and 80,000 to 85,000 roots at the time of sugar beet harvesting, in a zone of insufficient moisture.

The workers of raw material sections of sugar plants together with the specialists of sugar beet planting farms should help sugar beet machine operators to preserve the necessary density of sugar beet plants when it is formed. This will help to ensure the production of a richer harvest and an improvement in the quality of root crops.

The agronomical inspectors of sugar plants must work in full contact with the specialists of sugar beet planting farms, direct all their efforts toward the implementation of agrotechnical measures for the cultivation of sugar beets during optimum periods and see to it that all sugar beet growing fields are clear of weeds and mellow until the time of root crop harvesting.

Observations show that, when sugar beets are harvested on plantations littered with weeds, harvest losses comprise 20 percent and more.

Much attention should be paid to the correct ratio of mineral fertilizers applied when sugar beets are topdressed. A one-sided application of nitrogen fertilizers sharply lowers the technological qualities of purchased raw materials.

A general introduction of the initiative of Yampol' sugar beet growers and sugar industry workers in labor cooperation will ensure the elimination of sugar beet and sugar losses in all production sections from the sugar beet field to the production of white sugar at a sugar plant.

To improve the acceptance, storage and processing of sugar beets of the harvest of the concluding year of the 10th Five-Year Plan, extensive work should be done at the sugar beet receiving centers of sugar plants: A total of 1,334,000 square meters of platforms with hard covering and active ventilation should be built; 188 weighbridges of an increased freight

capacity, 71 lines for the selection and analysis of sugar beet samples for determination of sugar content and 4,335 ventilators and other equipment should be installed; 10,125,000 square meters of covering materials should be procured; 20 million tons of sugar beets should be placed for storage with active ventilation and 3.7 million tons of sugar beets should be treated with sodium salt of maleic hydrazide and with other biologically active substances; 629 clamp forming machines and 1,200 tractor loaders should be purchased; the traffic capacity of sugar beet receiving centers should be increased for the acceptance of up to 2,850,000 tons in 24 hours, as compared to 2,700,000 tons in 1979.

Extensive measures for improving the processing of purchased raw materials and increasing the production capacity are to be implemented at sugar plants.

Sugar industry workers should take the necessary steps so that the envisaged measures are fully fulfilled at every sugar beet receiving center and plant.

There is no doubt that the workers of sugar plants, associations and administrations of the sugar industry together with agricultural workers will organize in a shock manner the fight for obtaining a rich harvest of sugar beets and for improving their quality and will ensure the fulfillment of the assignments for the purchases of sugar beets and the production of sugar in 1980--the concluding year of the 10th Five-Year Plan.

This will be an appropriate contribution in honor of the forthcoming 26th CPSU Congress.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### MEASURES FOR PROTECTION OF SUGAR BEET CROP OUTLINED

Moscow SEL'SKAYA ZHIZN' in Russian 30 May 80 p 2

[Article by A. Kazachuk, senior scientific worker at the All-Union Scientific Research Institute of Sugar Beets, V. Petrov, deputy chief of the Main Administration for Sugar Beets and Tobacco of the USSR Ministry of Agriculture, and V. Martynenko, deputy chief of the Administration for Plant Protection of the Soyuzsel'khozkhimiya Association: "On the Sugar Beet Field"]

[Text] The cold weather in May, sharp drops in temperature and abundant rainfall in most sugar beet planting oblasts have led to excessive soil compaction in rows and interrow spacings and to the formation of soil crust. Such conditions increase the threat of affection of sprouts with black rot, hamper the development of plants and weaken their resistance to pests. Weeds have grown very tall.

Thus, the situation demands that all those connected with work on the sugar beet field in one way or another concentrate their efforts on obtaining healthy and good sprouts and promptly form the optimum plant density. Aiming at high final work results, many kolkhozes and sovkhoses together have embarked on the care of crops. At the same time, they mandatorily take into consideration the recommendations of scientists and the practice of advanced workers. On plantations infested with annual weeds, when there are no less than 20 sugar beet plants at the phase of one or two pairs of true leaves per running meter of a row, harrowing is done along sprouts and crops are cultivated with a crumbler. As a result, soil is not only loosened, but, in addition, up to 50-70 percent of the weeds are destroyed and sprouts are thinned partially.

On the fields where they have just appeared it is necessary right away, as soon as rows are formed, to begin blind cultivation--the first loosening of interrow spacings at a depth of 3 to 4 cm. This agricultural method is important primarily on plots where continuous preemergence loosening could not be done, or where rain fell after it, compacting the soil. The USMK-5.4A cultivators equipped with shovel blades, protective discs and the RB-5.4 rotary gangs are used. The practice when on some farms, in the

chase after the productivity of units, the protective zones of rows are increased during blind cultivation and only shovel blades are installed, should be eliminated completely. Oversimplification will lead to great expenditures of manual labor with further technological operations.

In connection with the later sugar beet planting dates ensuring an increased density of plants with their uniform placement in rows now becomes one of the basic factors in the production of a rich harvest. In all the main sugar beet planting regions the reserves of moisture in the soil are now good and, therefore, it is necessary to have no less than 100,000 plants per hectare by the harvest period. Kolchozes and sovkhoses in Cherkasskaya Oblast have acted correctly. They have decided to leave 115,000 to 120,000 plants per hectare--by the time sugar beets are dug out they will be within the norm.

On large areas sugar beets are now cultivated according to industrial techniques. Advanced collectives attain success by utilizing all the available down-the-row thinners and cultivators and taking into consideration, when the thinning plan is selected, the uniformity of plant distribution in a row.

The cold weather has lowered the mobilization of nutrients in the soil and rains have helped to wash them out from the arable layer into deeper horizons of nitrogen fertilizers applied in the fall and during the planting period. In connection with this the role of topdressing during the initial period of plant growth increases.

Ammonia water is used primarily--2 to 2.5 quintals per hectare. On fields insufficiently provided with mineral fertilizers since the fall a complete mineral fertilizer in terms of 30 to 40 kg of nitrogen, 20 to 30 kg of phosphorus and 25 to 30 kg of potassium per hectare is applied as a topdressing immediately after the mechanized thinning of sprouts. Fertilizers are placed at a depth of 10 to 12 cm. In order to prevent lump turning due to the waterlogging of soil, interrow spacings are first hoed at a depth of 6 to 8 cm and a shovel blade and a rotary gang are installed behind the fertilizer applicator. After the density is formed, crops should be topdressed with phosphorus and potassium in the same doses as during the first topdressing.

Meanwhile, the development of many pests has come to a halt. However, as the examination of fields shows, their population is very high and with the arrival of warm weather a sharp activity can be expected. The beet pest is especially dangerous, because it began to invade the crops before the appearance of sugar beet sprouts. A high population of this pest is observed in Poltavskaya, Cherkasskaya, Kirivogradskaya and Kiyevskaya oblasts. The pygmy mangold beetle has been detected in a number of western and central oblasts of the Ukrainian SSR and in the Moldavian SSR and the appearance of beet tortoise beetles has been noted in south Ukraine. The concentration of leaf hoppers, which present the greatest danger for young sprouts, is high on plantations in all zones.

In order to prevent damage to sugar beets, it is necessary to establish a constant observation of crops and to implement a number of preventive measures. Catching channels are cut around fields occupied by sugar beets and perennial grass and these channels and the accumulations of pests in them are regularly treated with hexachloran preparations or with metaphos. With the arrival of warm invariable weather, if the danger of damage to plants has been ascertained, boundary treatments of adjoining fields, from where pests can threaten, begin.

On the farms where granulated phosphamide was used, the harmfulness of the pygmy mangold beetle was prevented. Where this was not done, control of this beetle by means of hexachloran, basudin or phosalone should be organized. Phthalophos, basudin and polychlorocyclophene are used against the beet pest where its population totals 0.2 specimens per square meter and more.

The harmfulness of leaf beetles will increase in the first half of June with the hatching of the larvae of the new generation and the appearance of aphides, leafminers and moths is expected in the second half. Of diseases, downy mildew and leaf spot will appear.

Farm managers and the plant protection specialists of Sel'khozkhimiya associations must see to it in advance that the control of pests and diseases of sugar beets is organized, prepare ground equipment on time, conclude contracts with the subdivisions of Sel'khoztekhnika and civil aviation and deliver the necessary pesticides.

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CSO: 1824

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### OVERVIEW OF SPRING BEET-SOWING PREPARATIONS

Moscow SEL'SKAYA ZHIZN' in Russian 11 Apr 80 p 1

[Text] The Soviet Union is among world leaders in terms of level of sugar consumption. Per capita consumption is 43 kg per year. And the demand for sugar continues to grow. That is why the party and government are taking steps to continue increasing sugar-beet production, the most important raw material in our country for producing this valuable product. All the mineral fertilizer necessary for beet plantings is allocated, seed plants have been renovated, and a fundamental retooling of the branch is underway. On average over the last four years, plants have received approximately 17 percent more beets than in the preceding five-year period. The procurement growth was achieved primarily as a result of increased yields.

Production innovators set an example. After setting up business cooperation with a processing enterprise, beet growers of Yampol'skiy Rayon, Vinnitskaya Oblast, brought white-sugar yields up to a little over 50 q/ha. The link headed by Hero of Socialist Labor and winner of the USSR State Prize I. M. Nagornyy obtained 388 q/ha last year, and a dry one at that, on the kolkhoz imeni Chapayev in Kochubeyevskiy Rayon, Stavropol'skiy Kray, spending only 17.3 minutes to produce each quintal. High indicators were also achieved on the kolkhoz imeni Kirov in Voronezh, Buturlinovskiy Rayon, the "Enbekshi" sovkhos in Taldy-Kurganskaya Oblast, and on many other farms.

At the same time, kolkhozes and sovkhoses of a number of oblasts are not meeting plans for beet sales, and in a number of regions, the deficit in sales to the state is growing. This is especially true of the Central Chernozem zone, Moldavia and individual oblasts of the Ukraine. The basic reason is very low plant yields. Suffice it to say that nearly half the farms in the Russian Federation obtain less than 100 quintals per hectare. The mixed nature of the harvests is considerable. The difference sometimes reaches 150 quintals even on neighboring sovkhoses and kolkhozes.

We are currently faced with taking a big step forward in developing beet growing. Purchases of sugar raw material by the state must exceed 91 million tons. Not an easy task, but within the ability of rural laborers. The achievements of the leading workers convince us that the basis of high

harvests is the strictest observance of beet cultivation techniques, the effective use of fertilizers and equipment, and a reduction in losses of output after it has been grown. It is due to just such measures that both individual farms and whole rayons have achieved steady production growth, even under the most complex weather conditions. They include Gosyatinskiy Rayon (Ternopol'skaya Oblast), Pervomayskiy Rayon (Khar'kovskaya Oblast) and Starodubskiy Rayon (Bryanskaya Oblast). Party, soviet and economic organs are called upon to engage more actively in introducing the best experience and contemporary technologies.

Sugar beets react very sensitively to their place in the crop rotation. It is important to be more careful about which fields are set aside for them, giving preference to the best predecessors, to supply them with the full norm of mineral fertilizers, prepare the soil at the proper time, and be not a single day late with the sowing.

Now, when the temperatures are expected to rise intensively in the main farming zones and beets will have to be sown practically simultaneously with grains, success will be achieved by those who organize their labor precisely and make intelligent use of the time available. Scientists advise that no break be permitted between soil preparation and the sowing. In this connection, those farm leaders and specialists who rely mainly on using equipment in large groups are acting correctly. This tactic helps reduce sowing times and ensures that even stands will be obtained.

So far, in connection with the shortage of herbicides, a majority of the kolkhozes and sovkhoses have set a policy of mechanical methods of working sown areas. At the same time, chemists are obligated to increase the production of compounds which permit a sharp reduction in the labor-intensiveness of the branch and ensuring large-scale changeover to industrial technology. The foundation for this is being created. This year, a whole series of rayons will cultivate beets in a new way. It is the duty of kolkhoz and sovkhos leaders and specialists and agricultural agency workers to open up through new technology a wide road to the country's beet fields. This is one of the primary ways of further increasing root-crop production, of improving their quality and reducing prime cost.

The role of seed-growing beet sovkhoses in the struggle for high yields is great. They are called upon to provide commercial farms with high-quality sowing material. There are opportunities for doing so -- last fall, sufficient numbers of parent root crops were procured. Now, with the onset of the heat, it is important to preserve all of them, to permit no losses, and to set up their sorting and rapid planting while the seed plots are being laid out. It is time to bring into play the important reserve of growing seed in the south without transplanting. It would be hard to overestimate the potential of this method. In Kirgizia, for example, where sovkhoses have changed over completely to it, seed germination has been raised to 90-95 percent. Elsewhere, the no-transplant method is underestimated, so labor and monetary expenditures on cultivation increase and farms obtain poor-quality seed.

The operation of beet receiving centers and sugar refineries largely determines success in developing the branch. We must now ready the material-technical base and do everything possible to reduce losses in storage and processing and to increase end-product yield. The experience of the best enterprises testifies to the fact that opportunities are being used far from fully, that there are reserves.

These spring days, rural laborers link all their concerns to the new harvest. Beet-growers, too, are called upon to make a worthy contribution to meeting the assignments of the five-year plan as a whole and of its concluding year. Machine operators have already moved the sowing units out onto the fields in the Kuban', Stavropol' and elsewhere and have taken up a shock-work pace from the very start. Many of them are overfulfilling shift assignments and sowing quickly and well. The competition for best labor results is heating up. Beet growers are striving to grow more beets, to provide sufficient raw material to increase sugar production!

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### CHUYSKAYA VALLEY (KIRGIZIA) MODEL FOR BEET GROWERS

Moscow PRAVDA in Russian 19 Mar 80 p 2

[Article by Ye. Sosnin and V. Shirokov: "Bitterness of the 'Sweet' Root"]

[Text] Chuyskaya Valley in Kirgizia is a land of plenty, one of the southernmost regions of domestic beet growing. Good land equipped with reclamation systems, a reliable technical base, increasingly skilled personnel -- it would seem to have everything necessary to obtain good harvests. The leading farms annually harvest 450-600 q/ha of beets. Still, a number of kolkhozes and sovkhoses have begun harvesting fewer beets. Last year, the shortfall in state procurement was 166,000 tons and the sugar yield dropped sharply. Why?

V. Konskiy, Chairman of "Zavety Il'icha" Kolkhoz in Moskovskiy Rayon, was definitely in low spirits when we asked him that question. During the first four years of the five-year plan, his collective has fallen about 20,000 tons of beets into debt to the state. That is almost 10 percent of the plan.

"When I came to the farm," says V. Konskiy, "I was confident that there was no poor soil, but that there were poor managers. Now I'm convinced there is also poor land!"

Poor land...? Where does he come by so unfounded an appraisal?

Back in 1966, the republic average beet yield was 387 quintals. Given a plan for sales to the state of 1.6 million tons, 300,000 tons more were sold at that time. The sugar content had reached 15.9 percent.

Now let's see how such results were achieved. Whereas in the late 1960's about 30,000 hectares was sown to this crop, that figure has increased 1.5-fold over the last 10 years. At the same time, there is limited arable land in the Chuyskaya Valley, which means the only thing they can do is to cultivate beets continuously. By 1967, beets occupied an average of up to 66.8 percent of the land in the beet-growing zone. Some farms of Alamedinskiy, Moskovskiy and Panfilovskiy rayons put nearly half the sown area in the exact same spot year after year.

Production can be increased by expanding the area sown, but that is not without risk. The plants begin suffering from root rot.

It is known that harvests on irrigated fields are higher, but so is the danger of diseases and pests, and the threat increases using a one-crop system.

Only in the late 1960's, when beet yields fell below 300 q/ha, did the leaders of economic agencies and republic specialists and scientists heed the alarm, but even then, they took their time, and nothing came of it anyway. Whereas a fifth of the plants were "sick" with root rot in 1971, last fall about 80 percent of the sown area was infected on some farms. Yield fell sharply as a result. Although the republic as a whole averaged 348 q/ha, the harvest shortfall was about 30 percent in Sokulukskiy and Kantskiy rayons, where the bulk of the factory beets are concentrated.

The destruction of beets by diseases and pests has lowered sugar contents, deteriorated keeping qualities and led to increased losses in processing. During a season, plant losses due to this sometimes have reached 12 million rubles.

"The situation is alarming," says B. Semenenko, republic Deputy Minister of Agriculture. "We need resolute, effective measures to 'cure' the land and increase the harvest."

We do not agree. Practice has shown that if the soil is heavily infested, even a break of 3-6 years from sowing beets does not always eliminate the rot and nematodes. Success is considerably facilitated by timely, correct reclamation. About half the area sown to beets in the republic is saline, alkaline soil, but the rate and quality of applying gypsum to plots leave much to be desired.

We now need to level 70,500 hectares, reorganize intrafarm irrigation on 69,700 hectares, and water and apply gypsum to 16,000 hectares of alkaline soils. The schedules for performing these measures are consistently not followed. For example, the 1978 plan was to level upwards of 6,000 ha. It was met by only 50 percent, and the 1979 plan was met by only 40 percent. At the same time, poorly reclaimed land does not permit farms to maste. crop rotation quickly. Incidentally, crop rotation is not practiced on 28 of the 76 beet-growing kolkhozes and sovkhozes at present.

And the farmers themselves are failing to observe crop cultivation technology. On a number of farms, the plowing for winter fallow is being done late and they sometimes forget about preplowing irrigation entirely. There are also quite a few deviations from proper technology in caring for plants.

Incidentally, the above does not exhaust the opportunities for combatting dangerous enemies of the harvest, for increasing yields per hectare. The reference is to distributing this important commercial crop more efficiently on both a republic and a national scale. Kirgizia could become the largest supplier of beet seed.

Producing seed is a laborious, complex task, and it is not done efficiently in certain zones. At the same time, according to specialists of the USSR Ministry of Agriculture and the VASKhNIL [All-Union Academy of Agricultural Sciences imeni V. I. Lenin], the soil and climatic conditions in the Chuy-skaya Valley favor beet seed production. Under the structure proposed by them, 25,000 to 27,000 hectares could be sown to factory beets and up to 9,000 hectares could be sown to seed beets.

What would this mean? Let's follow some specific examples. In 1979, the gross seed harvest was 33,000 quintals -- 14 q/ha after initial preparation, and 16-23 q/ha on a number of farms. Many zones of the country can only dream of obtaining such yields. Moreover, in order to obtain seed balls they need a two-year cycle, while in Kirgizia they can essentially be grown as a winter crop. But the main thing is that there is considerably less root rot on such plots.

"There is a real possibility we could supply the country with about 200,000 to 250,000 quintals of sowing stock in short supply," says P. Naumov, Secretary of the Kirgiz Communist Party Central Committee. "This would improve the supply of seed to the country's beet growers, and the reorientation of republic farms would set up proper crop rotation and revivify the fields.

Such specialization corresponds to statewide interests, since a reduction in the area planted to factory beets in Kirgizia would permit increasing such areas in other zones by reducing the areas sown to seed beets there. Of course, it would then be necessary to create an appropriate material-technical base in the Chuy-skaya Valley.

And what about the interests of local processors? There are in fact several sugar plants in Kirgizia. According to the calculations for the proposed sowing structure, they would receive one to 1.1 million tons of sugar beets. That is, it is the opinion of specialists that there would be sufficient raw material for 75-80 days, an optimum period for high-quality processing. Moreover, improvement in the technological properties of the tubers would facilitate increasing sugar yields.

As we see, the beet-growing problem in Kirgizia is of much more than local importance. It cannot be solved without the help of the Gosplan, Ministry of Agriculture and USSR Ministry of Food Industry. Intelligent specialization and scientifically substantiated territorial distribution of beet seed production would provide a very substantial national economic impact.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BEET-GROWERS OF POLTAVSKAYA OBLAST READY FOR SOWING

Moscow PRAVDA in Russian 24 Mar 80 p 1

[Article by I. Lakhno]

[Excerpts] Tractor caravans have stretched across the fields since the first thawed patch of ground appeared. Farmers of Poltavskaya Oblast have begun the spring top dressing of winter crops, applying organic fertilizers to the soil. Beet growers are running final checks on their equipment. They have set aside 170,000 hectares for this valuable crop.

Beet-grower retraining is widespread in the oblast, but the proper attention is not being paid to leading experience everywhere. This is what V. Vantask, chief of the oblast agriculture administration, said about it: "Our specialists have analyzed the work of oblast beet-growing links. It shows that successes are more modest where progressive methods are approached in a formal manner than among the leaders. The fields of Mashevskiy Rayon are near Karlovskiy. The land is about the same in both places, but the results are different. This past year was difficult for everyone, but Karlovskiy beet growers raised 314 quintals on average and Mashevka growers raised only 171 quintals, under the same conditions.

The picture is roughly the same when we compare harvests in Kremenchugskiy, Kobelyakskiy and Kozel'shchinskiy rayons. Beet growers in the first rayon averaged 311 quintals per hectare last year, but their neighbors averaged less than 200 quintals. On the remaining farms, the training and retraining of personnel is still being done poorly. Kobelyakskiy and Kozel'shchinskiy machine operators are by no means completely familiar with the progressive technology used by Reshetilovskiy and Karlovskiy beet growers. The attention of party organizations and farm leaders and specialists should be focused on this. The sowing is not far off, but we can still manage to do much before it starts.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BET GROWERS OF TALDY-KURGANSKAYA OBLAST UNPREPARED FOR SPRING SOWING

Moscow PRAVDA in Russian 11 Mar 80 p 1

[Article by M. Dzhanguzhin: "Results Will Equal Contributions"]

[Excerpts] Sugar beets are one of the main crops grown by farmers of Taldy-Kurganskaya Oblast. It is currently being sown on 35,000 hectares. Field workers have resolved to obtain 300 quintals from each hectare, on average.

"Due to the late harvesting of last year's crop," says T. Sadykulov, chief of the oblast agriculture administration, "equipment maintenance was delayed. Still, we managed to make this up: soon all cultivating machinery will be ready for use....

However, that does not signify that oblast farmers are ready for the sowing. One-fifth of the area to be planted has not been plowed since last autumn on beet-growing farms and 28,000 hectares of irrigated plowed fields has not been leveled.

All is not well with reclamation equipment maintenance either. Last year, when every irrigation facility was checked in the spring, nearly half the equipment in the oblast was found to be in disrepair. What is worse, that situation is being repeated: less than half the sprinkling systems are ready.

A telegram received by the oblast agriculture administration states: "In Aksuskiy Rayon, 68 K-700 tractors stand idle due to a lack of engines and transmissions." Then follows a long list of spare parts in short supply. The situation is similar in a number of other rayons. We need the effective assistance of the republic Goskomsel'khoshtekhnika association.

An alarming situation has developed with regard to sugar-beet seeds: farms have been sent less than a third of their needs. "Pobeda" and "Taldy-Kurganskiy" seed-growing farms of the republic Ministry of Food Industry, which are called on to supply the oblast with planting material, fail to meet the assignment year after year.

Oblast party and economic agencies should take steps quickly in the days remaining before the sowing to speed up the completion of equipment repairs and provide the farms with seed.

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BEET-SOWING PREPARATIONS IN THE UKRAINE

Moscow SEL'SKAYA ZHIZN' in Russian 30 Apr 80 p 1

[Article by S. Luzgan: "Ukraine Sowing Beets"]

[Excerpts] Sugar-beet sowing always occupies a special place among the spring concerns of Ukrainian farmers, and all the more so now. Twice as much area has ordinarily been sown by the middle of the third 10-day period of April in oblasts where this crop is cultivated. That means the tempo and quality of the work has now taken on decisive importance for the future harvest.

Given the late spring, an example worthy of universal imitation has been set by farmers of Yampol'skiy Rayon, initiators of the struggle for highest end product yields. Last year, they harvested 435 quintals per hectare. The collective of the Gonorovskiy plant produced upwards of 50 quintals of sugar from them. They have now resolved here to obtain 450 quintals of beets and 55 quintals of sugar per hectare planted. Their words do not conflict with their actions. Standing a shock-work Leninist watch, rayon agriculture workers did the mulching in 32 hours, sowed early spring crops in two days, and sowed the beet fields in 50 working hours.

After finishing sowing their sugar beets, Yampol'skiy machine operators helped their neighbors. Today, they are doing the presprout harrowing on their own fields.

"The oblast party committee," its secretary, I. A. Bondarchuk, reports, "has approved the experience of Yampol'skiy farmers. Field work has been organized following their example, including sugar-beet sowing, by farmers of Trostyanetskiy, Tomashpol'skiy, Mogilev-Podol'skiy and other southern rayons. The pace of spring sowing is picking up on northern farms as well.

Machine operators and some equipment has been enlisted from various branches of the national economy to condense the time involved in spring field work. Particular attention has been paid to creating suitable conditions for the highly productive labor of participants in the heaviest spring work. But there have also been problems. For example, the sowing of individual crops,

including sugar beets, has to wait its turn on a number of farms of Chechel'nitskiy and Teplinsk'y rayons. Having revealed these shortcomings, oblast organizations are helping eliminate them.

The cold and the recent frequent rains have postponed sugar-beet sowing in Cherkasskaya Oblast. They began doing it only a couple of days ago here. And they must be given their due: the work is being done in an organized manner.

Beet growers have high hopes for this year. During the five-year plan thus far, they have brought average annual sugar beet output up to nearly five million tons and yields to 326 quintals, but they still failed to supply the state with 110,000 tons of sugar-beet raw material as compared with the plan. At the same time, even given the complex weather of last year, beet growers of Zhashkovskiy, Chernobayevskiy and Monastyrishchenskiy rayons and many oblast farms have fulfilled and overfulfilled the procurement plan.

Khmel'nitskiy beet growers also have large plans. During the current five-year plan, they have fallen 2.7 million tons of sugar raw material into debt to the state. One reason is violation of the demands of the agrotekhnical complex. Last season, for instance, farms of Dunayevetskiy, Krasilovskiy, Shepetovskiy and Khmel'nitskiy rayons failed to gather a considerable portion of the harvest just because the beet sowing stretched out for 15-17 days, and individual farms took nearly a month to do it.

That is why it has now been decided, in view of the weather conditions, to sow the beets simultaneously with early grains and to finish in 4-5 days in each rayon. It is mandatory that each individual field be sown in one day.

Having organized their labor following the Ipatovskiy method, upwards of 14,000 mechanized republic brigades and links are using each hour of fine weather in an attempt to avoid any breaks between presowing soil preparation and embedding the seed. The overall effort is to complete sugar-beet sowing during the First of May celebrations. In spite of the complex weather conditions, people are not permitting simplification of farming techniques and are doing twice as much work as usual each day.

Agricultural workers of the Ukraine have successfully passed the spring exam and are fully resolved to sell the state 50,250,000 tons of beets this year, obtaining at least 30 quintals of white sugar from each hectare of beet field.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### RYAZAN' FARMERS CONCENTRATE ON POTATO GROWING

Moscow IZVESTIYA in Russian 23 May 80 p 1

[Article by A. Koptsov (Ryazanskaya Oblast): "Potato Growers Have Entered the Relay Race"]

[Text] May has been stingy with heat this year: the forests and meadows are in no hurry to don their spring finery. And yet the farmers have to hurry: the best planting times are passing. And Ryazanskaya Oblast grain growers have turned over the relay baton to teams that cultivate potatoes.

Potatoes occupy 106,000 hectares of fields here. The leading teams--those of V. Fatkin of the Zarechnyy Sovkhoz in Kasimovskiy Rayon, N. Ryabinin of the 13 let Oktyabrya Kolkhoz in Kadomskiy Rayon, M. Yevstratov of the Iskra Kolkhoz in Shilovskiy Rayon, N. Vinogradov of the Druzhba Kolkhoz in Starozhilovskiy Rayon, and others--annually, in any weather, harvest 200 and more quintals of tubers per hectare. But their practice has not been adopted by all potato growers of the oblast and the average productivity is not great.

In the final year of the five-year plan farmers of the oblast have resolved to increase the productivity of the potato fields, to sell the state 700,000 tons of tubers, to store up good seed potatoes and to create good forage supplies. In general they have laid a fairly good basis for the future crop. Light soil has been allotted for potatoes, 762,000 tons more local fertilizer have been brought to the fields than last year, the planting has been assigned to specialized teams, and preference is being given to new, more productive strains.

Mass planting of potatoes is in progress these days. About 400 planting complexes have been brought out onto the fields. On many farms the seeds have been placed in furrows that were prepared ahead of time. Competition has been organized among the teams. Hence the results--despite the late spring and frequent rains, the potatoes have already been planted on 30,000 hectares. The leaders are the kolkhozes and sovkhoses of Kasimovskiy, Spasskiy, Sasovskiy and Novoderevenskiy rayons. The leading teams are already completing the plantings here.

Farmers of the Larechnyy Kolkhoz in Kanimovskiy Rayon have allotted 560 hectares for potatoes and have resolved to harvest 200 quintals of tubers from each of them.

"The commitments have been supported with a broad complex of organizational and agronomical measures," says the sovkhos director V. Akimov, "All the potatoes have been assigned to just two brigades that have good land, and the fields have been assigned to permanent teams. They have applied 40-50 tons of organic fertilizers to each hectare. We are planting highly productive strains--Temp, Ogonek and Gatchinskiy--only in furrows that have been cut ahead of time with 60,000 plants per hectare. At the same time we are applying 5-6 quintals of Nitrophoska. Our machine operators have re-equipped the cultivators, installed containers for mineral fertilizers on them, raised the sides of the loading boxes of the planters and mechanized the loading of seeds and fertilizers. All this made it possible to double the productivity of the equipment as compared to the norm and to increase the daily output to 10 hectares per planter. And we have six of them."

Ridge planting makes it possible to separate the soil better, to maintain the depth of planting of the tubers more precisely and to care for the planted areas and harvest the crop better.

Unfortunately, the work on potato fields has not been organized this way on all kolkhozes and sovkhoses of the oblast. The farms of Chuchkovskiy, Sarayevskiy and several other rayons have not managed to arrange smooth interaction among the teams of planting complexes or technical servicing of sets of equipment. And, as a result, the rates of work are low. Delay can have a negative effect on the productivity of this important food and industrial crop which people call the "second grain."

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### PESTS, DISEASES PRESENT THREAT TO POTATO CROP

Moscow SEL'SKAYA ZHIZN' in Russian 17 May 80 p 1

[Article by Yu. Padeyev, VASKhNIL academician, K. Novozhilov, corresponding member of VASKhNIL, and I. Polyakov, professor: ". . . And the Tubers Will be Healthy"]

[Text] The predictions of the spreading of pests and diseases of potatoes show that in 1980 the Colorado beetle and late blight can be the most dangerous of them. A large number of Colorado beetles is expected in the south of Severo-Zapadnyy Rayon, in Lithuania, in the southeast of Latvia, in Belorussia, in Tsentral'nyy Rayon in the south of Volgo-Vyatskiy Rayon, in Povolzh'ye, in the Central Chernozem region, in Kazakhstan, in the Ukraine, in Moldavia, in the Northern Caucasus and in the Transcaucasian area. If the remaining days of spring are warm the pests can populate immense areas planted in potatoes. For protection of the crop it is necessary to treat the planted areas mainly with chlorophos (1.5 kilograms), phthalophos (2.5) and polychloropinene (2 kilograms per hectare).

Late blight and bacterial and other diseases did not cause much damage last season. But by harvesting time infection had still accumulated in the tubers and in the soil. This creates danger of considerable spreading of potato diseases this year. Therefore in order to plant this crop in places where it has not yet been completed, it is necessary to select healthy tubers that are typical of the strain, to decontaminate the batches of seeds in order to fight against oosporiasis, brown patch and ordinary potato scab with a 3.5-suspension of 80 percent TMTD. In order to fight against phytophthora, brown patch and bacteriosis, the seed plantings of all strains of potatoes should have such predecessors as spring and winter wheat and rye which are planted after fertilized clean or occupied fallow, annual root crops or perennial grasses that have been turned under.

In order to prevent the development of bacterial diseases such as wire stem, death of the shoots and others, it is necessary to observe the optimal depths of planting the tubers, to conduct deep loosening of the interrows and to make the hills of the plants high. After heavy rains it is necessary to remove the excess water from the fields.

In fighting against phytophthorosis, especially in seed sections of early strains of potatoes, during the period of budding of the plants it is necessary to carry out preventive sprinkling with a Bordeaux mixture, sineb, ziram, or polycarbozene, and subsequently the treatments must be repeated, depending on the degree of infection of the planted areas. Along with the third and fourth sprinklings of the tops of early strains of potatoes, the same toxic chemicals are used to sprinkle the late strains the first and second times. It is also desirable before harvesting to mow the tops and remove them from the fields or to conduct defoliation.

One must not forget about the future crop and it is necessary to take all measures to prevent infection of the potato tubers with agents that cause fungal and bacterial rots. To this end, after harvesting the crop it is necessary to dry the tubers in special containers with ordinary or warmed air and to calibrate them into fractions. When there is no equipped sorting point, the potatoes can be dried in boxes that are covered with polyethylene film or under a shed. This can also be done in temporary clamps with intake and vertical ventilation.

It is also necessary to give preference to strains of potatoes that are resistant to phytophthorosis and other diseases. For regions where the most dangerous of them appear frequently and develop strongly one can recommend the strains Stolovyy-19, Lowhitskiy, Ogonek, Olev, Sulev and several others. Prompt measures for protecting areas planted in potatoes from the most dangerous pests and diseases are recouped by large crops, good quality and preservation of the potatoes.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### IMPORTANCE OF CORRECT POTATO PLANTING STRESSED

Minsk SEL'SKAYA GAZETA in Russian 27 Apr 80 p 1

[Article by N. Kononuchenko, deputy director of the Belorussian Scientific Research Institute of Potato and Fruit and Vegetable Raising: "Planting Potatoes Promptly and Correctly"]

[Text] This year early planting times for potatoes are of exceptional importance. Based on the availability of technical equipment and the existing possibilities, this work should be completed in about 8-10 calendar days. Optimal planting times make it possible to utilize the moisture in the soil and the heat more completely and to extend the growing period. The practice of planting potatoes in hills that have been prepared ahead of time should be introduced especially widely. This device makes it possible to begin planting 5-7 days earlier, which provides for an additional yield of 8-10 percent.

One of the most important factors that determine the yield of potatoes is providing for the optimal density of the planted area. Seeds with a weight of 50-90 grams should be planted every 25-30 centimeters in a row, taking into account that there should be no less than 55 bushes on each hectare by harvesting time. Small tubers weighing 30-50 grams should be planted in a row with 18-20 centimeters between them. This will amount to 55,000-70,000 tubers or 26-32 quintals of planting material for each hectare.

In order to provide for the recommended density of the planted areas, it is necessary for all plant setters to be combined with tractors that have a synchronic selection shaft that have the ability to use 20-22-tooth star wheels on the countershaft of the plant setter. A 16-tooth star wheel is permissible only for well sorted planting material of strains with large tubers.

The final selection with a replaceable star wheel of SN-4B and SKM-6 plant setters is done in the furrow when the plant setters pass over the first time. For this it is necessary to raise one pair of furrow covering disks (to separate the pressure rod from the frame and attach it to the disks with a wire) and to cover 18-20 meters at the established speed. After this

one can calculate the quantity of tubers in an open furrow with a length of 14,3 meters and multiply that times 100. The number of tubers obtained will be the planting norm for one hectare.

Unfortunately, on a number of farms the planting is done by driving the digging equipment of the plant setters from the independent power selection shaft of the tractor. This leads to irregular distribution of the tubers in the furrows and to excessive, inefficient expenditure of planting material on fields with irregular surfaces. The plant setters can not be operated when the springs of the grasping mechanism of the scoops are not in good repair. Even if one scoop does not eject the tubers, the number of misses reaches 5 percent.

It is necessary everywhere to activate the work for decontaminating the seed material. Potatoes can be treated in the backs of trucks, the bunkers of plant setters and also with the help of a device based on a universal top dresser-sprinkler. Then the treatment of the tubers with toxic chemicals is done directly in the plowshares of the potato plant setters.

One must remember that within 6-8 days after planting the potatoes, when the weeds are not yet in the so-called "white thread" stage, it is necessary to begin to tend the planted areas. Such a highly effective device as directed harrowing with cultivation of the areas planted in potatoes until the appearance of the shoots and in the beginning of the period after their appearance should become widespread everywhere.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### SPRING POTATO PLANTING DEADLINES MET

Moscow SEL'SKAYA ZHIZN' in Russian 23 May 80 p 1

[Article by V. Legan'kov (Belorussian SSR)]

[Excerpts] Despite the late spring, the planting of tubers was practically completed within the ordinary calendar time period by the farms of Khoynikskiy and Mozyrskiy rayons in Gomel'skaya Oblast and Brestskiy, Maloritskiy and Ivanovskiy in Brestskaya Oblast. A daily output of up to 10 hectares per plant setter and 500 tons of compost per loader became ordinary for a large number of machine operators.

The struggle to meet the deadlines is a struggle for the crops. As the research of scientists has shown, every ten days of delay with planting reduces the yield of tubers by 40-50 quintals per hectare. This factor has been taken under special supervision in the republic. It is no accident that for the past two years farmers of Belorussia have regularly obtained more than 100 quintals of potatoes per hectare and this year are striving for a yield of 190-200 quintals. But the significance of these indicators is still not great when compared to the biological potential of the strains that have been created in the republic. There are 150 Belorussian farms that last year harvested 250-300 quintals of tubers from each hectare, 50 that harvested up to 350 quintals, and 10 that harvested more than 400 quintals. Delay with planting keeps the majority of kolkhozes and sovkhoses from rising to their level.

"There are absolutely no mechanisms for loading the tubers from the plants into the sorting points and industry is not delivering potato loaders for the planting machines. The SN-4B series plant setters have long been obsolete and we see better ones only in the catalogues and prospectuses," justifiably notes the chief of the main board of the Belorussian Ministry of Agriculture, P. S. Netrukovich.

They calculate that a ton of manure provides for a quintal of additional yield of potatoes. The farms of Belorussia apply more than 20 tons of compost to each hectare during spring planting. By this spring they will have prepared more than 70 million tons, but they can not be loaded with existing

machines, according to the calculated normatives, in just 29 days. The picture is similar with respect to manure distributors. And it is not just that there is not enough of this technical equipment. It is extremely unproductive and the PB-35 loaders break down almost every day. Rural areas have long been waiting for industry to deliver a powerful loader to be used with T-150 and K-700 tractors, 10-12 ton fertilizer distributors and a new kind of harrow. The sooner this kind of technical equipment arrives, the more rapidly the ordinary farmers will have come close to matching the record yields of the leading farmers.

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CSO: 1824

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### MEASURES OUTLINED FOR COMBATTING PHYTOPHTHORA

Moscow SEL'SKOYE KHOZYAYSTVO ROSSII in Russian No 5, May 80 p 47

[Article by A. Tsygankov, chief of the oblast plant protection station:  
"The Effectiveness of the Fight Against Phytophthora"]

[Text] Phytophthora causes a great deal of damage to potatoes in our oblast. The disease has spread throughout all rayons. Especially strong outbreaks of it were observed in 1973, 1974 and 1977. And, as a result, the losses of potatoes frequently reached 25 percent. This is why plant protection specialists are devoting more and more attention to preventive, agro-technical and chemical measures that are conducted on the basis of predictions of the appearance and development of diseases.

The chemical method of protection starts with improving the condition of the seed tubers. Before planting the potatoes are treated with a 3-5-percent suspension of TMTD and a 0.02-0.03-percent solution of copper sulphate. The expenditure of the effective mixture is 40-70 liters per ton of seeds. The methods of treatment are quite varied. On the farms of Zhukovskiy, Novozybkovskiy and other rayons they do it in the following way. They install a POU reservoir on a planting aggregate. The liquid is pumped from it through pipes into a dispersing device which is installed on the plowshares of the potato plant setter.

The OVT-1 sprinkler is used in the majority of rayons of the oblast for treating planting material in clamps. Here it is very effective to soak the potatoes with the solution when they are loaded into the transportation carts. Last year more than 200,000 tons of tubers were treated with fungicides before planting, which considerably reduced their infection with phytophthora and made it possible to obtain an additional 10-15 quintals of tubers per hectare.

During the growing time, regardless of the strain of potato or its resistance to infection with phytophthorosis, two preventive treatments were conducted. The first--two weeks after the appearance of the foal shoots with a 0.1-0.2-solution of copper sulphate, and the next ones, before blossoming, with fungicides: 2.5 kilograms of zinab per hectare, 4 kilograms

of a 50-percent solution of copper oxychloride and 2.2-2.5 kilograms of a 90-percent solution, and 2.5-3 kilograms of cuprosan. The expenditure of the mixture with surface treatment is 100-300 liters per hectare and when it is applied with aircraft--50 liters. It is good to add 10-15 kilograms of urea to the effective solution of fungicide.

Subsequent chemical treatments with fungicides are conducted strictly according to signals from observation points of diagnosticians and predictions of interrayon plant protection stations. In 1979 most of the areas planted in potatoes on the farms of the oblast were sprinkled three times. First just with surface equipment and then with surface and aviation equipment. A total of 118,000 hectares were treated for phytophthora. Most of the early strains were treated twice, the late-ripening ones--three times, and the seed sections--four times.

In order to prevent contamination of the tubers with phytophthora during the harvesting period, the tops are mowed ahead of time and removed from the fields. On the general planted areas we do this 7-10 days before the beginning of harvesting and on seed sections--10-15 days before. This makes it possible to obtain healthy seed material that is uniform in size and form. Such tubers keep better during the winter period since their development is completely halted. All these measures made it possible last year to obtain an average of 148 quintals from each of 120,000 hectares. We sold the state 720,000 tons of tubers. The farms of Pogarskiy, Klimovskiy, Novozybkovskiy and Starodubskiy rayons harvested 170-190 quintals, and the Pervomayskiy Sovkhoz in Pochepskiy Rayon harvested 345 quintals per hectare.

This year plant protection specialists in their socialist commitments plan to conduct chemical treatments against phytophthora on an area of 450,000 hectares, which will amount to four treatments on almost all the areas planted in potatoes. The oblast's operational dispatcher service will be of great assistance in fighting against the disease. It daily gathers data about protection measures that have been conducted, analyzes them and sends the information to rayon managers and also to the agricultural production administration of the Oblispolkom.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### POTATO CROP PROGRESS IN LATVIYA REPORTED

#### Rayons Report Progress

Riga SOVETSKAYA LATVIYA in Russian 13 May 80 p 1

[Excerpt] This year according to the data of 12 May, in the republic 28 percent of the planned amount of potatoes has been planted and last year for this date only 19 percent had been planted. On the whole, the work is now going better, for example, on the kolkhozes and sovkhoses of the Ventspilskiy, Yekabpilskiy, Kuldigskiy, Talsinskiy, and Rizhskiy rayons. Tuber planting is unsatisfactory in the Balvskiy, Dobel'skiy, Stuchkinskiy and other rayons. The reason for this is an inadequately clear organization of field work.

#### Necessary Care of Plantings

Riga SOVETSKAYA LATVIYA in Russian 27 May 80 p 1

[Excerpt] An important agricultural method for getting high yields of potatoes is the care for plantings. Practice has shown that on the farms where rules of technology were broken and plantings were made late, care for the potatoes drags on, the fields become covered with weeds and the harvest is reduced. This year it is necessary to fundamentally reorganize the work process for caring for the potato fields in order that they be preserved in light form, and free of weeds. Now it is important to conduct several pre-sprout treatments of the potatoes.

#### Spring Planting of Vegetables

Riga SOVETSKAYA LATVIYA in Russian 31 May 80 p 1

[Excerpt] It is necessary to intensify work on those farms where the spring sowing is being done on the last hectares. The Dobel'skiy and Kuldigskiy rayons completely managed the sowing of spring crops. The farms in 11 rayons completed the planting of potatoes. However, on the last day the areas of planting increased by only one percent. The planting of vegetables and corn continues. The situation is most complex in the Balvskiy Rayon and particularly severe at the planting. It is necessary to help local farms to make up for losses in the shortest time possible.

On the kolkhoses and sovkhozes work has begun for caring for planted potatoes, other plantings and work on improving crop raising is being conducted. Simultaneously they are preparing to send out fodder preparation teams of complex technological brigades to the meadows. Despite the fact that the growth of grasses was held back, we must not let the more favorable times for hay-mowing pass.

Spring passes on the baton to summer work. There can be no quiet in the work. Everyday is a struggle for high yields for the final year of the five-year plan.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

UDC 633:490:631.532

### STRUGGLE WITH POTATO BLIGHT IN BRYANSKAYA OBLAST CONTINUES

Moscow SEL'SKOYE KHOZYAYSTVO ROSSII in Russian No 5, May 80 p 47

[Article by A. Tsygankov, chief of the oblast station for the protection of plants: "The Effectiveness of the Struggle with Phytophthora"]

[Text] In our oblast the greatest loss of potatoes is due to phytophthora. The disease is spreading in all of the rayons. It particularly flared up in 1973, 1974 and 1977. And, as a result, the loss of potatoes frequently reached 25 percent. That is why specialists for the protection of plants are paying more and more attention to preventive, agro-technical and chemical measures taken on the basis of the prognosis concerning the appearance and development of the disease.

The chemical method of protection begins with the sanitation of seeded tubers. Prior to planting potatoes they treat them with 3-5 percent suspension of TMID [tetramethylthiuram--Disulphide] and .02-.03 percent solution of copper sulphate. The amount used of the working blend is 40-70 liters per ton of seeds. The methods for treatment are quite varied. On the farms of Zhukovskiy, Novozybkovskiy and other rayons they do this. At the planting assembly unit a reservoir of a mobile desalting unit is set up. From it the liquid is pulled along pipes to a dispersion system installed in the drill of the potato planter.

In the majority of the rayons of the oblast in processing pile planting materials they use sprayer OVT-1. Moreover, wetting the potatoes with the solution during its transport in the cart is quite effective. Last year prior to planting over 200,000 tons of tubers were treated with fungicides, which significantly decreased the loss due to phytophthora and allowed 10-13 quintals of tubers per hectare to be gathered.

During the vegetation period regardless of the variety of potato and its resistance to disease from phytophthora, two preventive treatments are conducted. The first is done two weeks after the appearance of complete shoots and .1-.2 percent solution of copper sulphate is applied. The following one is done prior to blossoming--using fungicides: 2.5 kilograms of Tsineba per hectare, 4 kilograms of 50-percent copper oxychloride

and 2.2-2.5--of 90-percent, and 2.5-3 kilograms of Kaprozan. The expenditure of the solution during surface treatment is 100-300 liters per hectare, and for air treatment--50. It is good when in the work solution of fungicide, 10-15 kilograms of urea are added.

Subsequent chemical treatment with fungicides were made strictly according to signals from diagnostic observation points and predictions of inter--rayon stations for plant protection. In 1979 the planting of potatoes on the farms of the oblast were basically sprayed three times. First with the help only of ground equipment, and later with ground and air equipment. A total of 118,000 hectares were treated against phytophthora. Early varieties were basically treated twice, late-ripening ones--three times, and seed plots--four times.

In protect' g tubers from contamination by the phytophthora during the harvest period, the tops are first cut and removed from the field. In general planting we do this 7-10 days prior to harvest, on seed plots it is done 10-15 days. This allows us to gather healthy seed material which is equal in size and form. Such tubers can be better preserved during the winter period since they have fully concluded their development. All of these measures last year allowed an average of 148 quintals of potatoes per hectare of the 120,000 hectares to be harvested in the oblast. The state was sold 700,000 tons of tubers. On the farms of the Pogarskiy, Klimovski, Novozybkovski, and Starodubskiy rayons 170-190 quintals were harvested and on the Pervomayskiy Sovkhoz of the Pochepskiy Rayon--345.

This year specialists on the protection of plants in their socialist obligations plan to conduct chemical treatment against phytophthora on an area of 450,000 hectares, which will comprise four treatments of almost all potato plantings. Great assistance in the struggle with the disease is rendered by the operation control service of the oblast. It daily gathers data concerning protective measures taken, analyzes them and brings the reports to the rayon leaders as well as to the production administration of agriculture of the oblast executive committee.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### POTATO CROP PROGRESS IN BRYANSKAYA OBLAST

Moscow SEL'SKAYA ZHIZN' in Russian 27 May 80 p 1

[Article by G. Krasnoperov]

[Excerpt] Complex weather conditions of the spring delayed the mass planting of potatoes in the Bryanskaya Oblast. By the middle of May the lag was stopped. In many of the Novozybkovskiy kolkhozes and sovkhoses they even finished with the planting in better agro-technical periods of time.

The Novozybkovskiy Rayon is completing its potato planting completely. The farm workers of the Klimovskiy, Dyat'kovskiy, Karachevskiy and Trubchevskiy rayons are close to completing this work. Throughout the oblast over two-thirds of the planned area which comprises 116,300 hectares has been completed.

The potato farmers are hurrying. They know that dragging out planting even for one day past the optimal term leads to a loss of from three to four quintals per hectare of tubers.

The Bryansk potato farmers are actively working in the fields. On many farms the amount of organic fertilizer is increased.

But basically, the harvest is being built up because of the implementation of new intensive varieties.

Cold weather significantly promotes the growth of weeds. Beginning the tilling for planting, potato growers try not to allow the "green fire" to occur.

"We consider the existing situation," says Chief of the Agricultural Administration of the Novozybkovskiy Rayon Executive Committee N. F. Budnik. "On all the farms of the rayon they have begun to take care of weeds. The first 'blind' tilling was conducted already on 7,000 hectares..."

The course of the struggle for the harvest did not go without interruptions. The leaders of some farms did not consider the particular features of spring.

For example, on the Klyukovenskiy Sovkhoz 40,000 tubers per hectare were to be put out. Under the conditions of lowered temperatures and increased moisture in the land was not enough. Advanced workers have had the hectare dose of seeds brought to 60,000. On the Zarechnyy Sovkhoz until the middle of May, apparently, they did not plant potatoes: they waited for clear days. But time passes between those days.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### POTATO CROP REPORT FROM VLADIMIRSKAYA OBLAST

Moscow SEL'SKAYA ZHIZN' in Russian 7 Jun 80 p 1

[Article by Yu. Shtatnov: "Concern for the Potato Fields"]

[Excerpta] This spring has been especially difficult for potato growers. The cold, rainy weather interrupted the course of the work time and time again. But the their mastery won out.

It should be said that the Vyaznikovskiy workers are actively searching for ways of increasing the productivity of the tubers. Specialization and concentration of production made it possible to concentrate the potato plantations in the hands of certain individuals--teams--and to assign them the necessary technical equipment. Occupied with a single crop for several years, the farmers are becoming excellent experts of its agrotechnology and more successfully placing the achievements of science and advanced practice in the service of the crop.

They have gone even farther on the farms of Gus'-Khurstal'nyy Rayon--one of the main suppliers of commercial potatoes, and also on the Golovino Sovkhoz and the Bol'shevik Kolkhoz in Melenkovskiy Rayon. Potatoes are being cultivated according to industrial technology on these farms this year.

This year's difficult situation forced the specialists to search out "reserves of productivity" and they were utilized well in advance. First, they included forming the hills ahead of time which made it possible to accelerate the warming of the soil on the lower sections. Another way, which is practiced on the Druzhba Sovkhoz in Gus'-Khurstal'nyy Rayon, was to allot two kinds of fields for the "second grain": on raised places for the rainy summer and in low places for a dry summer.

The density of the plants was very important. But the imperfect drum of the potato plant setter and the fact that it was sometimes in bad repair led to skipping sections in the furrow. A device designed by Vyaznikovskiy workers helped to correct this problem. It included special protective panels which held tubers of various sizes in the containers of the carousel drum. This innovation helped to maintain the established density of the plantings.

And there is another important factor that guarantees a good crop: the seed material. Potato seed growing is being changed over to a scientific, industrial basis. A network of seed growing farms has been created for this. They helped to "prescribe" the promising strains of Ogonek, Sulev, and Gatchinskii for the fields of Vladimirskaya Oblast.

In seed growing, along with other factors, importance is attached to storing the tubers. Incidentally, in recent years Vladimirskaya workers have been devoting special attention to problems of storing both seed and commercial potatoes. In many rayons standard storehouses for 500 and 1,000 tons have replaced the clamp and pits. In Yur'yev-Pol'skiy Rayon, four of them have been constructed in the past three years, in Gus'-Khrustal'nyy--three and in Muromskiy--five. In only four years of the current five-year plan storehouses with an overall capacity of more than 41,000 tons have been put into operation.

These days, when they have begun to tend the plants on the potato plantations, the preparations for the harvest and storage of the "second grain" is in full swing. New standard storehouses are going into operation in the KIM Solvkhov, the Sovkhoz imeni 17-go Partsozd and the Krasnyy Oktaybr' in Yur'yev-Pol'skiy Rayon. They will be equipped with machines and mechanisms for sorting and calibrating the tubers and climatic installations that provide for a given temperature and air conditions.

New bases for storing seed and commercial potatoes are also being constructed on the kolkhozes and sovkhoves of Muromskiy, Aleksandrovskiy, Sudogodskiy and other rayons. The majority of farms are using their own labor to construct them. Potato growers of more than 300 Vladimirskaya farms are striving to make sure that this important food crop is carefully attended and to obtain a large yield.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### POTATO CROP CARE IN BELORUSSIA DISCUSSED

Minak SEL'SKAYA GAZETA in Russian 1 Jun 80 p 2

[Article by N. Kononuchenko, deputy director for scientific work of the Belorussian Scientific Research Institute Potato and Vegetable Growing, candidate of agricultural sciences: "Painstaking Care for the Potato Fields"]

[Text] The warm weather that has come in the last few days will accelerate the appearance of potato shoots. Weeds will be developing at the same time. This circumstance makes it incumbent on agronomists and all potato growers to care for the planted areas creatively. In each specific instance it is necessary to take into account weather conditions, the peculiarities of the soil, the degree of its weediness, the conditions of the plants, and so forth.

The majority of farms are now tending the planted areas on a broad front, strictly observing all technological parameters. In this regard one should note the high-quality work of many machine operators of Grodnenskaya Oblast. But a number of kolkhozes and state farms of the republic are not arranging the cultivation of the interrows of potatoes at the best time and are allowing slipshod work. An inspection showed that certain rayons of Gomel'skaya Oblast are delaying the first cultivation of the areas planted in potatoes.

Data of the BelNIITKPO and many years of practice on the farms of the republic established that the first cultivation of the areas planted in potatoes with sets of KON-2.8PM and KRN-4.2G machines with chain harrows should be started no later than 5-7 days after the planting of the potatoes, when the weeds are in the stage of "white threads." If this time is allowed to pass and random hilling is done, for example, 12 days after planting, only 40-60 percent of the weeds will be destroyed and the remainder will develop a powerful root system.

As a rule, blind ridging is done 2-3 times before the shoots appear and once after their appearance. But here too it is necessary to take specific conditions into account. One must not forget that on sections with shallow planting of the tubers the working parts of the cultivator must be regulated

as as to raise the furrows. Then the harrows must be turned in such a way that they cut off the weeds from the rear side.

When operating sets of equipment with chain harrows, depending on the conditions, on a section of cultivators they install a ridging device, arrow-shaped blades, chisel looseners or a combination of them. Frequently when caring for the plants the workers do not devote attention to regulating the chain harrows, as a result of which the teeth go along a single path and dig out many tubers. Machine operators must note that the angle of the harrows should be 7 degrees and their deflection--20 centimeters. With this setting the distance between the tracks of the neighboring teeth will be 1.5-2 centimeters, which provides for destroying the weeds over the entire surface of the fields. The harrows are mounted in such a way that the sharpest and longest teeth are in front.

And another circumstance. Cultivating the planted areas after the appearance of the shoots produces the best effect when the height of the plants is 5-7 centimeters. It is not recommended to cultivate the area at the time that the shoots appear since the young sprouts are very fragile at that time and are easily broken off.

As soon as the plants reach a height of 12-15 centimeters one should begin interrow cultivations and keep them up right until the tops close together. The workers are incorrect on those farms where the care for those plants begins with deep ridging instead of the recommended loosening of the interrows. The first loosening should be deeper (up to 14-16 centimeters), which contributes to allowing the air to reach the root system as well as to better warming of the soil. In dry weather the depth of loosening is decreased to 8-10 centimeters. But on sandy soil it must not exceed 6-8 centimeters. This is done in order to reduce the evaporation from the lower layers of the soil.

One can begin interrow cultivation with shallow ridging only when the water has remained on the fields for a long time after heavy rains.

As for top dressing the planted areas, this should be done only if it has been impossible to apply fertilizers with the basic dressing for one reason or another, or if the plants are poorly developed. But in any case it should be done no later than at the time of the first interrow cultivation.

One should watch out for another violation when caring for the planted areas. Frequently instead of ridging the planted areas they cut the furrows without spreading the loose soil around the bottoms of the stalks of the potato plants. The agrotechnical role of ridging consists in making sure that the loosened layer of soil is of an even depth after the cultivation of the furrows. From the axils of the lower leaves new runners are formed, and the tubers are formed on these. This creates special demands for observing protective zones when placing the working parts of the cultivator so as not

to harm the root system and not allow crushing or complete breaking of the plants.

Ridging produces a good effect on heavy and medium loamy soil. It increases the intake of air to the root system and also partially prevents the tubers from being damaged by phytophthora. The ridging is usually done twice on soil like this.

Before cultivation it is important to determine where the plant setters pass first so as to begin the cultivation of the interrows in the same direction as the planting was done. When bringing the cultivator onto the line of the first pass one should go 30-50 meters and stop the set of equipment and check the depth of the working parts throughout the entire width of the grasp. When the cultivation deviates from the set depth by more than 2 centimeters the set of equipment should be regulated again. The junctures of the interrows should also coincide with the working grasp of the machines.

It is exceptionally important to protect the planted areas from phytophthora and Colorado beetle. Here major attention should be devoted to the promptness of the measures for plant protection. The first time the planted areas must be cultivated even before the spots of phytophthora appear on the leaves of the potatoes, following signals from the prognostication service. One can roughly say that this work should be done during the phase of budding and the beginning of blossoming. Subsequent cultivations are done at intervals of 8-12 days. In order to destroy the larvae of Colorado beetle, insecticides are added to the solution of fungicides. All plant protection measures should be carried out strictly according to recommendations.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### TENDING OF CROPS IN LITHUANIAN SSR DESCRIBED

Vilnius SOVETSKAYA LITVA in Russian 6 Jun 80 p 1

[Article by Ministry of Agriculture for Lithuanian SSR: "For Fine Tending of the Crops"]

[Text] On many farms throughout the republic, the crops are being tended in an intensive manner. This work is highly organized in Ignalinskiy, Kaunasskiy, Pasval'skiy, Shirvintskiy, Shakyayskiy, Varenskiy and a number of other rayons. Here, in the plantings of spring grains, sugar and fodder beets, potatoes, corn and other crops, weeds are being destroyed by harrowing prior to and following the germination of cultivated plants, the inter-row spacings of row crops are being cultivated and herbicides are being employed in a skillful manner.

However, the crops are not being tended correctly in all areas. Improvements are required in the tending of the grain crops on farms in Shal'chininskiy, Kayshyadorskiy, Trakayskiy, Ionishkskiy, Vil'nyusskiy and Zarasayskiy rayons, where a comparatively small portion of the spring grain crops has been harrowed and the spraying of the crops with herbicides is being carried out very slowly.

Special importance is being attached to the high quality tending of the sugar and fodder beet plantings, potatoes and corn. This work is in need of improvement in Alitusskiy, Radvilishkskiy, Kupishkskiy and Prenayskiy rayons. The harrowing of fodder beets, prior to and following germination, should be accelerated on farms in Plungeskiy, Kel'meskiy, Shal'chininskiy and Shilal'skiy rayons and the tending of potato plantings should be organized and carried out in a better manner on farms in Vil'nyusskiy, Lazdiyskiy, Plungeskiy, Kedayskiy and Anikshchyayskiy rayons. The tilling of the inter-row spacings of potato plantings is being carried out on a tardy basis at the Butrimonas Sovkhoz in Shal'chininskiy Rayon and at the Novaya Zhizn' Kolkhoz in Vil'nyusskiy Rayon.

A high corn yield can be obtained only if weeds are destroyed in an intensive manner using mechanical and chemical means. At the present time, all of the corn plantings should be harrowed immediately prior to germination.

Importance is also being attached to ensuring that the crops are reliably protected against pests, since aphids and grain sawflies have made an appearance in the spring crop plantings coincidental with the onset of warm weather. The farm agronomists must display concern for ensuring that these weeds are destroyed by employing herbicide-insecticide mixtures when tending the crops.

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CSO: 1824

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### SPRING SOWING PROBLEMS IN LITHUANIAN SSR EXAMINED

Vilnius SOVETSKAYA LITVA in Russian 21 May 80 p 1

[Article by Ministry of Agriculture for Lithuanian SSR: "For More Rapid Completion of Sowing Operations"]

[Text] Having organized their work in a fine manner and by making productive use of their equipment, the farmers on a majority of the farms completed sowing their spring grains, sugar and fodder beets and other crops. In particular, the sowing work was carried out at a high tempo last week in Shakyayskiy, Yurbarskiy, Akmyanskiy, Kaunasskiy, Tel'shyayskiy, Radvilishkiy and Raseynski rayons.

However, the sowing of a number of crops has still not been completed on many farms. Some concern is being aroused by the fact that individual farms in Kelaynskiy and Kupishkiy rayons have still not completed their sowing of sugar beets, while farms in Kupishkiy, Tauragskiy, Ukmergekiy, Shyalal'skiy and some other rayons have fallen behind in their sowing of flax. Importance is being attached to carrying out more rapidly the sowing of spring crops and the planting of potatoes.

The experience of previous years reveals that the work tempo usually decreases towards the end of the sowing work. This must not be the case this year. The farm leaders and specialists are responsible for ensuring that all farms carry out their plans for the sowing of all crops and for resowing those areas on which the winter crops and perennial grasses perished. Meanwhile, the resowing of spring grains on areas on which winter crops perished is being dragged out on farms in Ionavskiy, Rokishkiy, Lazdiyskiy and Panevezhskiy rayons. Many farms in Kel'meskiy, Trakayskiy, Moletskiy, Shirvintskiy and a number of other rayons are unjustifiably postponing to a later period their sowing of perennial grasses.

On suburban farms where large areas have been set aside for the growing of cabbage, the seedlings are being planted all too slowly. The operation of the equipment must be organized in two shifts.

For the purpose of procuring a large quantity of high quality feed from the farms, importance is being attached to the skilful sowing of annual grasses and corn. These crops should be sown in soils that have been provided with an ample top dressing of ammonia liquor. As a rule, corn should be planted using wide inter-row spacings.

Simultaneous with sowing the remaining crops, tracts that were sown earlier should be tended in a thorough manner. They should be harrowed. However, inspections have revealed that the grain crops on individual farms in Plungeskiy, Vil'nyuskiy and other rayons should not be harrowed prior to germination.

During the initial sowing days in which use was made of the selective sowing method, unsown areas remained in waterlogged sectors and at the ends, corners and along the edges of fields. All of these unsown areas must be thoroughly worked and then sown.

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CSO: 1824

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### WEATHER, FIELD CONDITIONS IN LATVIAN SSR REPORTED

Riga SOVETSKAYA LATVIYA in Russian 6 Jun 80 p 3

[Article by V. Knava, agricultural meteorologist: "Weather and Crops"]

[Text] This present month of May will be remembered as a month of unusually cold weather. Snow fell on more than one occasion and there were frequent frosts. The average temperature during May was 2-4 degrees lower than usual and amounted to only 7-8 degrees. The last time such cold weather was experienced in Latvia during the month of May was in 1965, at which time it was followed by a warm month of June.

A warm spell set in again this year during the 26-28 May period, the average daily temperature of the air rose above the 10 degree level and active plant growth commenced 2-3 weeks later than usual. The leaves on the trees grew larger and the bird cherry trees began blossoming. There were periods of rainfall, with the supplies of productive moisture in the soil being increased.

The first day in June brought truly pleasant summer weather, with the air temperature in the republic rising to 25-29 degrees.

The stalks of the winter grain crops continue to show growth. The spring barley is for the most part in the third leaf-to-tillering phase and the initial signs of shooting have appeared in the early April plantings. Only recently the temperature conditions for corn reached an optimum state, with the soil temperature at the seed placement depth having increased to 15-18 degrees. The flax and sugar beet seedlings are turning green out on the fields, with the first pair of leaves appearing among the early plantings. The seedlings of vegetable crops have been planted in the soil. A greater amount of attention must be given to selecting the tracts for these heat-loving crops and they must be planted under the best microclimatic conditions and in warm soils.

The grasses have entered their period of active growth. Stem growth continues among the clover crops and ears are forming on the cereal grasses

on some meadow areas, with their height at times reaching 15-30 centimeters. The weight of the grass fodder being obtained from 1 square meter is 600-750 grams.

Moderately warm weather, with brief intervals of rainfall in various areas, is expected in the republic in the near future.

7026

CSO: 1824

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BRIEFS

**CABBAGE PLANTING--**Minsk--The southern rayons of Belorussia have begun to set out plants of early cabbage. In the next few days the vegetable raisers will begin to start cucumbers in plastic hothouses and to plant carrots. [Text] [Moscow TRUD in Russian 27 Apr 80 p 1] 11772

**COMPLETED PLANTING--**The kolkhozes and sovkhoses of Belorussia completed the planting of grain crops and potatoes yesterday. [Text] [Moscow TRUD in Russian 28 May 80 p 1] 11772

**WEATHER DELAYS--**Kiev--Machine operators of the Ukraine have taken their potato plant setters out on to the fields. The farms of the northern rayons of the republic have begun to plant seed tubers. More than 7,000 specialized brigades and teams have entered into the work. Because of the prolonged cold spells it was necessary to make significant adjustments to the working plans and to sort out the seeds, prepare the soil and apply the fertilizers more quickly. The tubers are warmed for better sprouting which, in the opinion of specialists, will make it possible, to a considerable degree, to make up for the parts of the growing period that have been missed. Utilizing technical equipment very productively in two shifts, the farmers intend to complete the planting in the first ten days of May. All the necessary conditions exist for this. The farms have prepared carefully for the season. The machines are operating reliably and the tubers are being planted mainly in soils that were prepared ahead of time and have been warmed better by the rays of the sun. An average of 50 tons of organic fertilizers and 10 quintals of mineral fertilizers are being applied to each hectare of fields planted in potatoes. The strain composition of the seed tubers has been improved. The "second grain" has become the crop of machine operators. This year for the first time industrial technology will be used for their cultivation on 6,000 hectares in Gorodnyanskiy and Kulokovskiyy rayons in Chernigovskaya Oblast. Farms of the republic which have experienced personnel for potato raising have committed themselves to obtaining an average of 143 quintals of tubers per hectare of planted area and selling the state 3.21 million tons of product. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 25 Apr 80 p 1] 11772

**POTATO PLANTING--**The Massiaru Kolkhoz in Pyarnuskiy Rayon, the Yytseng Kolkhoz in Rakvereskiy Rayon and the Ryagavere Solvkhoz have begun potato planting. [Excerpts] [Tallinn SOVETSKAYA ESTONIYA in Russian 30 Apr 80 p 1] 11772

LITHUANIA--Vil'nyus-- The farms of Lithuania began planting early potatoes yesterday [Text] [Moscow TRUD in Russian 27 Apr 80 p 1] 11772

NEW POTATO TECHNOLOGY--Kaluga--The planting of potatoes is being done with new technology on many farms of Kaluzhskaya Oblast. The tubers are being placed in furrows that have been cut ahead of time. [Text] [Moscow TRUD in Russian 21 May 80 p 1] 11772

POTATO PLANTING PROGRESS--By 5 May potatoes had been planted on 1,136 hectares in the republic (2 percent of the plan). Rakvereskiy Rayon is ahead of all the others (6 percent). But if one compares what has been done by the farms, the picture turns out to be quite spotty. Thus on the Massiaru Kolkhoz and the Kolkhoz imeni Lenin in Pyarnuskiy Rayon, the amounts of potatoes that have been planted are 37 and 26 percent of the plan, respectively, and on the Kuusalu Kolkhoz in Khar'yuskiy Rayon--20 percent, but the farms of Khiyyaanskiy Rayon have not even begun to plant potatoes yet. [Excerpt] [Tallinn SOVETSKAYA ESTONIYA in Russian 7 May 80 p 1] 11772

24-HOUR POTATO PLANTING--Yakutsk--The white nights made it possible for potato growers of the leading farms of Yakutiya to complete the planting of potatoes in record times. The work was done 24 hours a day. [Text] [Moscow TRUD in Russian 28 May 80 p 1] 11772

EARLY POTATOES--Bryansk--The planting of early strains of potatoes is in progress in the Bryansk area, which has the largest potato fields in Russia. Striving to make up for the time lost because of the late spring, the machine operators are immediately reaching high rates of field work. The technical equipment is being used on two shifts on many of the farms. [Text] [Moscow SEL'SKAYA ZHIZN' 27 Apr 80 p 1] 11772

MORE POTATOES--Severo-Kazakhstanskaya Oblast--This year potatoes will occupy 9,200 hectares in the oblast. This is the largest area planted in the "second grain" in the republic. [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 24 May 80 p 1] 11772

TWO SHIFTS--Frunze--Potato growers of Kirgizia have gone out onto the fields. In order to make up for the time loss because of the rainy weather they have decided to plant all the tubers only by the Ipatovo method. About 20 mechanized complexes are working on two shifts. The farmers of the republic have committed themselves to selling the state 80,000 tons of potatoes, 15,000 tons more than at the beginning of the five-year plan. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 15 Apr 80 p 1] 11772

IMPROVEMENT IN SOIL FERTILITY--Rossosh'--Liquid anhydrous ammonia, which the farmers in Rossozhanskiy Rayon in the central chernozem zone have begun using, will make it possible to improve the fertility of the fields. [Text] [Moscow TRUD in Russian 31 May 80 p 1] 7026

**ALTAY BEETS**--Kolkhozes and sovkhoses of Altay have begun sowing sugar beets. More than 60,000 hectares of plowed field is to be sown to this valuable commercial crop. Farmers plan to do the sowing in five working days. [Text] [Moscow TRUD in Russian 7 May 80 p 2] 11052

**GEORGIAN BEETS**--They have begun sowing beets on kolkhozes and sovkhoses of Georgia. Leading farm workers have obligated themselves to gather a rich harvest, more than double the planned amount, this year. [Text] [Moscow IZVESTIYA in Russian 30 Mar 80 p 1] 11052

**LITHUANIAN BEETS**--A multipurpose detachment from the Kolkhoz imeni V. Kapuskas has achieved a Lithuanian record in sugar-beet sowing. Machine operators needed less than three days to sow a field of nearly 300 hectares. A republic school of leading beet cultivation methods has been opened on this farm. [Text] [Moscow TRUD in Russian 7 May 80 p 2] 11052

**CROP BASED ON TECHNOLOGY**--Using industrial technology, machine operators of multipurpose detachments and links have expanded the sowing of a basic commercial crop, sugar beets. The main beet plantations are now located on the best lands, only in southern and southeastern regions of the Orel area. This permits using equipment most effectively and obtaining stable harvests on beet fields. [Text] [Moscow TRUD in Russian 6 May 80 p 1] 11052

**YAMPOL'SKIY BEETS**--In labor competition with sugar industry and motor transport workers, Yampol'skiy beet growers are now working towards obtaining 430 quintals of sugar beets and 55 quintals of sugar per hectare of beet field. Trying to be true to their word, they completed beet sowing on the entire area in four days, as was reported by Hero of Socialist Labor Pavel Luk'yanchikov, First Secretary of the Yampol'skiy Raykom. [Text] [Kiev PRAVDA UKRAINY in Russian 23 Apr 80 p 3] 11052

**CHERKESSK BEETS**--Machine operators of Karachayevo-Cherkesia continue sowing sugar beets. This crop will be sown to 13,000 hectares. The goal of the beet growers is to obtain 300 quintals per hectare and sell the state 350,000 tons. Sugar beets have already been sown on the first few thousand hectares in this autonomous oblast. (D. Daurov) [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 24 Apr 80 p 1] 11052

**CHERKESIA BEETS**--Some 59,000 hectares in the oblast has been set aside for sugar beets. Beet growers have obligated themselves to obtain at least 266 quintals per hectare. Farmers of Kotovskiy Rayon will aim for 322, and in Baltskiy Rayon -- for 310 q/ha. Now is an important time for beet growers, sowing time. The harvest will depend largely on its quality and the speed with which it is done. Machine operators are trying to complete it well and quickly. First to have coped with the sowing are farms of Ivanovskiy Rayon. (A. Soldatskiy) [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 2 May 80 p 1] 11052

**KUBAN' BEETS**--Kuban' machine operators have begun sowing sugar beets. It is to be sown to upwards of 200,000 hectares of plowed field. Significant areas are to be sown by the single-grain or cluster method, which permits obtaining the necessary number of plants per hectare without thinning. Special machinery has been manufactured in rural workshops using local blueprints for one other progressive method, hilling the plants. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 11 Apr 80 p 1] 11052

**OREL BEETS**--Sowing units have moved onto the largest beet-growing field of the Nonchernozem Zone. Oblast machine operators have begun sowing the main commercial crop, sugar beets, on a large scale. Beet cultivation specialization and concentration has been completed prior to the start of this sowing season. Oblast beet growing has been shifted from the traditional western and southwestern regions to southern and southeastern regions, where the land is fertile and the climate somewhat warmer. This creates the best conditions for obtaining higher, more stable harvests. Beet fields are closer to crop storing and processing centers, so transport expenditures are considerably reduced and shipping losses are cut to a minimum. Cultivation of this crop is based on industrial technology on all 77,000 hectares planted here. All areas are prepared for sowing beginning in the fall; the beets are located basically on bastard fallow, with copious applications of organic fertilizer and manure. The needed amount of herbicides is applied in the spring, which helps destroy weeds even before they emerge. Orel farmers countered the caprices of the cold, late spring with high labor organization for the sowing. It is done by the Ipatov method, using large detachments and machine complexes. In the concluding year of the five-year plan, oblast beet growers plan to procure at least 1,350,000 tons of the sweet root. [Text] [Moscow IZVESTIYA in Russian 6 May 80 p 1] 11052

**KURSKAYA OBLAST BEETS**--Kurskaya Oblast has one of the largest beet fields in the Russian Federation, about 200,000 hectares, and they plan to harvest 240 quintals of sugar beets from each hectare. Equipment is being maneuvered skillfully these days on farms of Sovetskiy and Solntsevskiy rayons. Machine operators of Gorshechenskiy Rayon are doing the field work quickly. Quite a few examples could be given of selfless labor, but for the oblast as a whole, the rate at which this valuable crop is being sown are alarming. In Konyshvskiy and Khomutovskiy rayons, beet growers got the sowers out onto the fields only at the start of the second five-day period in May, and the work still has not picked up the pace properly. Sowing is being done slowly in Medvenskiy, Ponyrovskiy, Zolotukhinskiy and other rayons. Equipment is not being maneuvered properly and poor use is made of "windows" between rains. The fastest possible elimination of shortcomings in sowing work organization is one important condition for reaching the goals planned. Each day of delay can cause irreparable damage to the harvest. (A. Trubnikov) [Excerpts] [Moscow SEL'SKAYA ZHIZN' in Russian 11 May 80 p 1] 11052

**KUBAN' FARMERS' OBLIGATIONS**--These days, Kuban' farmers are working hard. They are faced with sowing 211,000 hectares to sugar beets. Their obligations anticipate selling the state 6,100,000 tons of beets and bringing their sugar content

up to 98 percent. Some 910 brigades, links and divisions have decided to ensure sugar yield of at least 45-50 quintals per hectare. Unfortunately, area beet growers are experiencing a shortage of phosphorous fertilizers. Less than 50 percent of the orders for hexachlorane gammaizomet have been filled. Supplies of herbicides, and especially of the highly effective treflane, betanal and several others, are entirely inadequate. On the whole, the sowing of plowed Kuban' fields is organized at a high pace. However, not all farm leaders and specialists have drawn the proper conclusions from the sad lessons of last year and are content with simplified farming techniques. Take, for example, the Kolkhoz imeni Kalinin in Vyselkovskiy Rayon, where less than 100 quintals per hectare was harvested. They continue to resort to presowing tamping of the soil and are applying herbicides without markers. Farming-technique and organizational mistakes are being permitted in sowing on other rayon farms as well. For example, beets are not being put on good predecessors everywhere, and individual farms have not set up public catering properly. The fields forgive no sins, and especially during sowing. (Yu. Semenenko) [Excerpts] [Moscow SEL'SKAYA ZHIZN' in Russian 15 Apr 80 p 1] 11052

**MASS SOWING OF BUCKWHEAT--Kiev--**The mass sowing of buckwheat commenced yesterday on farms in the central and northern zones of the Ukraine. The cultivation of this crop, for which almost 350,000 hectares of arable land have been set aside, will involve the extensive use of progressive agricultural practices and the introduction of new varieties. During this final year of the five-year plan, the farmers have resolved to produce approximately 4.2 million quintals of buckwheat. [Text] [Moscow TRUD in Russian 20 May 80 p 1] 7026

**SPRING FIELD WORK--Odesskiy Rayon, Omskaya Oblast--**A great amount of concern was displayed this year for the arable land: organic fertilizers were applied in a timely manner and the soil was packed for the purpose of retaining moisture. One main concern persists at the present time -- to keep pace with the schedules. There are more than 130,000 hectares of arable land in Odesskiy Rayon in Omskaya Oblast and each hectare requires special concern on the part of the farmers. In the autumn the earth rewards the grain growers in the form of full-weight golden ears. This present spring period has turned out to be a very difficult one for the Omsk grain growers. The prolonged autumn rainfall experienced last year interfered with the gathering up of the straw and the releasing of fields for autumn plowing. This work must now be carried out during the spring period. The work schedule is extremely tense and a sharp increase has taken place in the workload for the equipment and personnel. But spring prepared still another surprise: on flat areas the land was dried out by warm winds and in low areas the spring flood waters form what appear to be entire lakes. The equipment must be maneuvered and moved about from one field to another. The sowing periods are dependent to a considerable degree upon the degree to

which the personnel are organized and upon their ability to utilize fully each good hour of time. Special importance is attached to the mood of the farmers as they carry out their work. During the past few years, Odesskiy Rayon has obtained high and stable yields of grain -- 17 quintals per hectare. The culture of farming has improved and new equipment has been added to the vehicle pools of the farms. These factors will enable the farmers to obtain even higher yields this year: no less than 19 quintals per hectare. Such is the obligation undertaken by the rayon's workers. [Excerpts] [Moscow TRUD in Russian 30 May 80 p 1] 7026

**GRAIN CROP SOWING COMPLETED--Tselinograd--**Yesterday the farmers in Tselinogradskaya Oblast completed their sowing of grain crops. The work was completed considerably earlier than is usually the case. Mineral fertilizers were applied simultaneously with the seed to almost 1 million hectares of land. This year the virgin land grain growers plan on selling 2.5 million tons of grain to the state. [Text] [Moscow TRUD in Russian 30 May 80 p 1] 7026

**PROGRESSIVE BUCKWHEAT TECHNOLOGY--Orel--**A progressive technology for cultivating buckwheat is being introduced on farms in Orlovskaya Oblast. The mass sowing of buckwheat is being carried out using the wide-row method. This will make it possible to carry out several inter-row tillings, with simultaneous applications of fertilizer. [Text] [Moscow TRUD in Russian 30 May 80 p 1] 7026

**KIROVSKAYA OBLAST GRAIN PLAN--Kirovskaya Oblast--**The sowing work is nearing completion in the northeastern portion of the non-chernozem zone. The delayed spring and subsequently the abundant amount of rainfall during May served to delay the schedules and make the sowing work more tense. At the present time, a high value is being placed upon each hour of good time out on the fields. The grain growers in Kirovskaya Oblast are striving to obtain 2.05 million tons of grain -- 350,000 more tons than were harvested last year. In order to achieve this goal, the machine operators on a majority of the farms are striving to carry out their sowing work during the best periods and on a high agrotechnical level. There are 746 sowing complexes in operation out on the fields. Technical and routine daily services have been organized for them. Each machine operator has quality coupons. A competition has been launched among the teams and brigades for the highest output and it is producing fine results. However, there are also examples of another type that can be cited for the oblast. In terms of their sowing rates, Kiknurskiy, Sanchurskiy, Nolinakiy, Falenskiy and some other rayons have fallen behind in their work. Here the self-propelled equipment was not prepared in a timely manner in all areas, at times the equipment broke down or lay idle and violations of the agricultural procedures occurred in some areas. Moreover, a number of fields were 2-3 days late in moving their equipment out onto the fields. Yes and some enterprises of Gossel'khoztekhnika were unable to complete their equipment repair work prior to the commencement of the sowing work. The fact that good quality seed is not being planted in the soil in all areas is also a

disturbing fact. Of 180,000 tons of quality standardized seed, only one third meets the requirements for first and second class quality and 62,000 tons of the seed have a germinative capacity lower than 80 percent. True, the oblast has an order for the delivery of flax seed, but Smolenskaya and Kalininskaya oblasts have still not fulfilled the task of the Ministry of Agriculture for the RSFSR with regard to shipping the seed. [Excerpt] [Moscow SOVETSKAYA ROSSIYA in Russian 30 May 80 p 1] 7026

HIGH QUALITY SOWING OPERATIONS--Kurganskaya Oblast--More than 1,000 complexes and detachments are in operation on the grain fields in the Trans-Urals region -- an area of 1.84 million hectares of grain plantings. The farmers are carrying out their mass sowing operations at a high tempo and ahead of schedule. The sowing of the principal grain crop -- wheat -- has been completed. This was the result of fine preparations for the sowing operations and the use of a creative approach in carrying out the work. For the very first time in the oblast, the agronomists in Pritobol'nyy Rayon employed the rich experience developed at industrial enterprises in Russia -- public defense of agricultural technical plans. The "field technologists" submitted their own estimates for review by experienced colleagues in the rayon and together they discussed the comments and proposals and introduced corrections. The public defense of the agricultural technical plans proved to be an effective means for improving responsibility and control. The agronomists agreed to carry out such a defense of the plans prior to harvesting the crops. While intensifying their work tempo, the farmers are at the same time devoting a great amount of attention to the quality of the sowing operations. The work has been organized on the basis of the Ipatovo method in all areas. This is making it possible to employ the flow line technology on an extensive scale, thus eliminating a pause between the soil preparation and sowing operations. This is of special importance in the Trans-Urals region: the greater the economies in the use of soil moisture, the healthier the seedlings -- a reliable guarantee for a good harvest. In Yurgamyshskiy Rayon, strict agronomic control is being exercised over each sowing unit and working implement. Constant checks are being carried out on the seed placement depths. Action is being taken against any and all degrees of negligence. [Excerpt] [Moscow SOVETSKAYA ROSSIYA in Russian 27 May 80 p 1] 7026

UZBEKISTAN RICE SOWING COMPLETED--Tashkent--Yesterday the rice growers of Uzbekistan completed their sowing operations on an area in excess of 100,000 hectares. They planted their seed after having established a reliable base for obtaining a generous harvest this year. The republic's farmers are striving to obtain more than 500,000 tons of the white grain. [Text] [Moscow TRUD in Russian 28 May 80 p 1] 7026

BUCKWHEAT, MILLET SOWING COMPLETED--Vl'yanovsk--Yesterday the farmers in the central Volga region completed their buckwheat and millet sowing operations. Each farm required 3-4 days for completing this work -- considerably less time than usual. [Text] [Moscow TRUD in Russian 31 May 80 p 1] 7026

**SOYBEAN SOWING COMMENCES--**Vladivostok--The sowing of soybeans commenced yesterday in Primorskiy Kray. One feature of this work is the mass introduction of wide-swath units, as recommended by Far East scientists. Each such unit consists of 2-3 coupled grain sowing machines. This enables the machine operators to accelerate their work by two and a half times -- and to sow not just 20 hectares during a shift, as is usually the case, but rather up to 50. In all, soybeans will be grown this year on no less than 150,000 hectares -- almost one fourth of the entire area under crops in the kray. [Text] [Moscow TRUD in Russian 20 May 80 p 1] 7026

**DELAYED SOWING SCHEDULES--**The kolkhozes and sovkhoses in Ventapilaskiy and Kuldigaskiy rayons are completing their grain crop sowing operations. The sowing work in Valkaskiy Rayon is being carried out in a better manner than was the case last year. But the reports reveal that many rayons are unjustifiably dragging out their spring sowing schedules. In Valvskiy, Ludzenskiy, Dobel'skiy, Valmiyoraskiy, Gulbenskiy and Tsesisakiy rayons, one half of the areas set aside for grain crops had still not been sown by 12 May. Certainly, definite difficulties associated with the unfavorable weather prevented some of the kolkhozes and sovkhoses, especially in the eastern rayons, from accelerating the tempo of their spring field work. But in some areas the work was also impeded by weak control being exercised over the course of the sowing work by the farm leaders and specialists. Compared to Yelgavskiy Rayon where the daily increase in sowing work amounted to an average of eight percent, in Stuchkinskiy Rayon it was only four percent. One feature of this present sowing campaign -- the sowing of all crops on a complex basis. Neither disruptions nor a sequence can be tolerated in the carrying out of this work. [Excerpts] [Riga SOVETSKAYA LATVIYA in Russian 13 May 80 p 1] 7026

**LATVIAN GRAIN SOWING OPERATIONS--**Notwithstanding the caprices of spring, the republic's farms carried out their sowing of spring grain crops in an organized manner. The grain crops were sown more rapidly than was the case last year. The farmers in a majority of the rayons throughout the republic either met their schedules or surpassed them. Fine production marked the work performed by technological complex detachments in Talsinskiy, Dobel'skiy, Salduskiy and certain other rayons, where seven and more percent of the grain fields was sown daily over the course of a week's time. [Excerpts] [Riga SOVETSKAYA LATVIYA in Russian 31 May 80 p 1] 7026

**GRAIN SOWING WORK COMPLETED--**Riga--The sowing of grain crops in Latvia was completed 1 week earlier than last year. The farmers carried out this work during the best agrotechnical periods. More than 800 complex detachments are employing the Ipatovo method. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 29 May 80 p 1] 7026

**SOWING OF SPRING GRAIN CROPS--**The sowing of spring grain crops is nearing completion on farms throughout the republic. This year the work is being

carried out in a more organized manner than was the case last year. The sowing work in the western rayons -- Talsinskiy, Ventspilskiy and Kuldigskiy -- was carried out more rapidly than in the other rayons. Fine work was also performed by the farmers in Rihskiy and Lielvayskiy rayons and the farmers in Dobel'skiy Rayon raised their work tempo. The situation is somewhat more complicated in the eastern rayons. Thus, only slightly more than one half of the spring crops have been sown in Balvskiy Rayon, including only 66 percent of the grain crops. It bears mentioning that during a 5 day period the area occupied by grain crops here increased by only 16 percent. The task is one of ensuring that use is made of all available forces and resources, including the assistance of leading farms, so as to ensure that the spring grain crops are completely sown during the next few days. [Excerpt] [Riga SOVETSKAYA LATVIYA in Russian 22 May 80 p 1] 7026

WEATHER DELAYED SOWING OPERATIONS--The sowing of spring crops is nearing completion. Ninety nine percent of the grain crops have been sown. Such work has been completed in 12 rayons. Owing mainly to poor weather conditions, the work fell behind in Balvskiy Rayon, where 15 percent of the grain crops still remain to be sown. [Text] [Riga SOVETSKAYA LATVIYA in Russian 27 May 80 p 1] 7026

CSO: 1824

## POST HARVEST CROP PROCESSING

### GRAIN ELEVATOR CONSTRUCTION OVERVIEW

Moscow MUKOMOL'NO-ELEVATORNAYA I KOMBIKORMOVAYA PROMYSHLENNOST' in Russian No 5, May 80 pp 2-3

[Text] Laborers of our country have marked the 110th anniversary of the birth of Vladimir Il'ich Lenin with a shock-work special work effort, under conditions of great patriotic upsurge and widely developed, large-scale socialist competition for fulfillment and overfulfillment ahead of schedule of the five-year plan as a whole and the plan for the concluding year of the 10th Five-Year Plan. All this is a real manifestation of the ideological-political unity of the Soviet people, of how closely knit it is around the Communist Party.

The name of Lenin, a titan of scientific thought and a genuinely popular leader, creator of the Communist Party and the first socialist state in the world, is endlessly dear and close to the heart of each Soviet person, to all laborers, to all progressive humanity. He devoted his brilliant, heroic life to a great, noble cause, to the struggle for social liberation of the proletariat and all those oppressed, for the happiness of people of labor.

After creatively applying the revolutionary theory of Marxism and generalizing the experience of the proletariat's struggle for its freedom, Lenin brilliantly developed and enriched it with new scientific theses and conclusions about ways of changing over from capitalism to socialism.

Leninist teachings on imperialism, on the law of uneven development of individual countries in the era of imperialism and opportunities for the victory of the socialist revolution initially in one or a few countries, on socialist revolution and the dictatorship of the proletariat, on its class allies, on the new type of proletarian party, on the principles of peaceful co-existence of states with different social structures, and about many other fundamental problems of the theory and practice of building communism are an invaluable ideological-theoretical and methodological weapon for revolutionaries of all countries in the struggle with imperialism and for social progress and peace throughout the world.

Lenin's cooperative plan was the basis for a fundamental restructuring of productive forces and production relations in the countryside, of socio-economic progress in agriculture.

The 24th and 25th CPSU Congresses and subsequent CPSU Central Committee Plenums have made a large creative contribution to further developing Marxist-Leninist theory. New socioeconomic categories and concepts such as developed socialist society, socialist economic integration, the Soviet people as a new social community of people, and the national socialist state have arisen on the basis of generalizing the achievements in building socialism in our country and of formation of the world socialist system.

Vladimir Il'ich Lenin foresaw that after the victory of the socialist revolution in our country, a "developed socialist society,"<sup>1</sup> "full socialism"<sup>2</sup> and an "ultimately victorious and consolidated socialism"<sup>3</sup> would be built. This brilliant foresight by the great thinker and revolutionary has been implemented and has become reality. A developed socialist society has been built in the USSR by the selfless labor of the Soviet people. Its basic features, political and economic system, and social victories have been embodied and secured in the new USSR Constitution.

The concept of developed socialist society which has been developed through the collective efforts of the CPSU and the fraternal communist and worker parties is a great creative contribution to the treasure house of Marxism-Leninism.

In the CPSU Central Committee accountability report to the 24th Party Congress, Comrade L. I. Brezhnev revealed the essence and demonstrated the basic features of developed socialism and in the report at the 25th CPSU Congress he provided a detailed, scientific description of developed socialist society and concretized the methods for creating its material and technical base and ways for socialist production relations to grow into communist ones.

Under conditions of socialist society, along with other branches of the national economy, elevator, wheat flour-grinding and mixed-feed industry has achieved a high level of development. These branches of industry received particularly strong development after the March (1965) CPSU Central Committee Plenum, which worked out a program of major organizational and economic measures to develop agricultural production. In 1979, grain elevator capacity had increased 1.5-fold as compared with 1966, including a more than 3.6-fold increase in the number of elevators. The production capacities of graded-grinding mills increased 1.4-fold during those years and those of wheat grinding mills -- 1.6-fold. Mixed-feed industry was created entirely anew and now produces somewhat more than three-fold more mixed feed than was produced in 1966. The capacity of the grain driers enables us to dry wet, moist grain arriving to join state resources in a nationwide average of one month.

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1. "Poln. sobr. soch." [Complete Collected Works], Vol 36, p 139.
2. "Poln. sobr. soch." Vol 43, p 130.
3. "Poln. sobr. soch." Vol 27, p 253.

The scientific and technical revolution currently in progress encompasses both the elevator and wheat flour-grinding industry and the mixed-feed industry.

Elevators being built now are being equipped with highly productive means of mechanizing loading and unloading work, post-harvest processing and forming homogeneous grain lots, with grain driers, grain cleaners and means of controlling, regulating and monitoring production processes and stored grain quality.

In flour-grinding industry, we have expanded construction of enterprises capable of processing 500 tons of grain a day using modern, highly productive equipment which ensures a sharp increase in the effectiveness of grain use, an increase in flour of the highest grade, faster return on capital and fast recompensation of capital investments.

Lenin attached exceptionally important significance to increasing labor productivity in the matter of ensuring the final victory of socialism. He said that after the proletariat had won power, "it would be necessary to give priority to the fundamental task of creating a higher social structure than capitalism, namely, to increasing labor productivity and, in that connection and for that purpose, higher labor organization."<sup>1</sup> In this regard, he also pointed out the solution to this task -- providing a material base for large-scale industry, increasing the production of fuel and metal, developing machine building and chemical industry, raising the educational and cultural level of the masses and increasing worker discipline and work skills, labor quality and intensiveness, and better labor organization. Lenin paid a great deal of attention to organizing socialist competition, to using everything of value from the victories of science and engineering in the field of labor organization under capitalism. He attached enormous importance to protecting grain: "...have the proper steps been taken to protect the grain which has been harvested...",<sup>2</sup> and to increased economy and labor discipline. "Keep track of money accurately and conscientiously," he said. "Manage thriftily, do not loaf, do not steal, follow the strictest discipline in your labor."<sup>3</sup>

Governed by these theses of Lenin's, Comrade L. I. Brezhnev pointed out in the report at the 25th CPSU Congress that, in order to resolve economic and social tasks now facing the country, "there is no other way but to increase labor productivity quickly, to sharply increase the effectiveness of all social production."<sup>4</sup>

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1. "Poln. sobr. soch.," Vol 36, p 187.

2. "Poln. sobr. soch.," Vol 54, p 307.

3. "Poln. sobr. soch.," Vol 36, p 174.

4. "Materialy XXV s"yezda KPSS" [Materials of the 25th CPSU Congress], Moscow, Izd. polit. literatury, 1976, p 43.

The 25th CPSU Congress proclaimed the policy of increasing production efficiency to be the pivotal problem of party economic policy in the 10th Five-Year Plan and long into the future.

At the November (1979) CPSU Central Committee Plenum, Comrade L. I. Brezhnev, CPSU Central Committee General Secretary and USSR Supreme Soviet Presidium Chairman, provided a profound, comprehensive, scientific analysis of the state of our economy. As a result of the actualization of 25th CPSU Congress resolutions, since the start of the five-year plan the country has advanced considerably in developing the national economy, in further raising the material and cultural standards of living of the people, in strengthening its defense capability. National income has increased appreciably, fixed production assets have grown substantially, and industry has been developed to a higher degree. Party agrarian policy has been systematically implemented and the material-technical base of agricultural production has been strengthened. Real per-capita incomes have risen and five-year plan assignments on worker and employee wage growth, kolkhos member income and expanding social consumption funds are being carried out.

The collectives of USSR Ministry of Procurement grain processing enterprises have, as a result of widely developed socialist competition, overfulfilled the assignments for the first four years of the five-year plan in terms of output sold (by 1.2 billion rubles), graded flour production (by 1.9 million tons) and mixed feed (by 3.6 million tons). At the same time, plans for the production of groats and protein-vitamin additives, putting grain storage facilities, grain driers, flour-grinding and mixed-feed plants into operation, and for fixed assets have not been met.

Large tasks face the collectives of grain receiving and processing enterprises this year. As compared with last year, output sold must be increased 4.2 percent, graded flour -- 7.5 percent, groats -- 10 percent, and mixed feed -- six percent. The production of carbamide concentrate, protein-vitamin additives and technological equipment for grain storage facilities, flour-grinding and mixed-feed plants will be increased.

Labor productivity at grain processing enterprises must be increased by an average of 2.7 percent as compared with last year and at grain receiving centers -- by 5.5 percent.

The most important task is to improve elevator design and the quality of elevator construction, as well as to ensure the start-up of grain driers, mills, mixed-feed plants, housing and preschool institutions.

In accordance with Lenin's strictly scientific principles presented in his "Draft Plan for Scientific and Technical Work" on distributing industry efficiently from the viewpoint of proximity of raw material and opportunities for losing a minimum of labor when changing over from raw material processing to all subsequent stages of processing semifinished products right up to obtaining finished output, the construction of wheat flour-grinding and mixed-feed industry is anticipated to be primarily in regions in which the

output they produce is consumed. With a view towards further reducing inefficient interoblast and interrepublic grain, flour and mixed-feed shipments, we plan to build enterprises in the Central Asian and Transcaucasian republics and in the Far East.

V. I. Lenin's instructions that "we must not work without a plan covering a long period and aiming at substantial success"<sup>1</sup> have found further development in the CPSU Central Committee and USSR Council of Ministers Decree "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality," adopted in July 1979.

The USSR Ministry of Procurement is working out and implementing measures to carry out that decree. The indicator of net (normative) output is being introduced at wheat flour-grinding, mixed-feed and grain receiving enterprises for planning and evaluating production activity results. Experience in including grain drying and cleaning operations, hay pressing and associated circulation outlays in the cost-accounting sphere is being accumulated this year at independent and grain-produce combine elevators and grain-receiving enterprises of the Voronezh, Stavropol', Kiev, Poltava and Vitebsk grain-products associations. An economic experiment is being run on including in the cost-accounting sphere transport outlays for intraoblast grain and grain-processing product shipments.

The collectives of enterprises and organizations of the USSR Ministry of Procurement, as are all Soviet people, are directing all their activity towards the struggle to carry out the resolutions of the 25th Party Congress, the CPSU Central Committee Plenums, the economic and social development plans, and socialist obligations assumed to carry out successfully the 1980 plan and the five-year plan as a whole in celebration of the 110th anniversary of the birth of V. I. Lenin.

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1. "Poln. sobr. soch.," Vol 42 pp 153-154.

## POST HARVEST CROP PROCESSING

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### GRAIN ELEVATOR CONSTRUCTION HISTORY OUTLINED

Moscow MUKOMOL 'NO-ELEVATORNAYA I KOMBIKORMOVAYA PROMYSHLENNOST' in Russian No 5, May 80 pp 4-5

[Article by E. Khuves, USSR Ministry of Procurement's Main Administration of Elevator Industry]

[Text] Our country and all of progressive humanity are celebrating the 110th anniversary of the birth of Vladimir Il'ich Lenin, the founder and leader of the world's first socialist state, a great practical worker and outstanding theoretician of revolutionary transformations. The greatness of his ideas and their importance and applicability to today, to building communism in our country, are revealed ever more fully with each passing year.

Vladimir Il'ich paid much attention to questions of grain procurement, transport and distribution. Thus, among the first documents of the Soviet Government on 15 February 1918, Lenin signed the Decree on Nationalizing the Largest Granaries. Under this decree, all the largest granaries of the State Bank, the railroad department and those belonging to private and public institutions and individuals were declared to be state property and were transferred to the temporary administration of the People's Commissariat of Food. After issuing a decree on the Committee of State Installations of the Supreme Council of the National Economy, the Council of People's Commissars entrusted that committee with the functions of building so-called "auxiliary installations for transport" (elevators, granaries, refrigeration facilities, and so forth). Under this committee, in turn, a Main Administration of State Installations with an elevator construction department was created. Subsequently, supervision of the granaries was transferred to corresponding Gosbank and People's Commissariat of Railways (NKPS) departments.

Rigid centralization of all foodstuff resources played a large role in the victory over internal counterrevolution and foreign interventionists and helped restore the ruined national economy.

V. I. Lenin was very attentive to communiques from places where there were shortcomings in grain storage and shipment. Thus, for example, a communique on the food situation in Tula reported that seven carloads of rye sent

to Tula from the Kochetov food center on 24 July 1920 took 12 days to travel 250 versts and that not one of the 20 carloads of rye sent from Kochetov by I. S. Lobachev on 2 August had arrived. In response to this letter, on 9 August 1920 V. I. Lenin sent the secretary the following instruction: "1. Send Lobachev (People's Commissariat of Food) measures to be taken and 2. tell me what they are. 3. Demand an explanation (250 versts in 12 days) from the People's Commissariat of Railways. 4. Speed up traffic on the route indicated in No 3. 5. Put this on the Sovnarkom agenda for Tuesday."<sup>1</sup> This problem was discussed in the Council of People's Commissars in the days that followed.

V. I. Lenin noted that "elevators provide a powerful push to commercial grain production and drive its technical development forward...."<sup>2</sup> The year 1924 was crucial in the history of elevator industry in the country: elevator construction began at that time.

In 1927, it turned out to be possible to allocate 2.5 million rubles from the state budget to build elevators. This work was entrusted to the "Khlebo-produkt" joint-stock company (which existed from 1922 through 1928) which had a planning department which worked out the first plans for 1,050-ton and 1,640-ton gravity-feed wooden elevators; by 1928, a 3,500-ton elevator was created, but by now with belt conveyors.

Beginning in 1930, elevator construction was transferred to the "Khlebostroy," which developed plans for 2,000-, 3,800- and 5,000-ton elevators equipped to handle 66-75 tons per hour.

From 1924 through 1931, a total of 452 elevators with a total capacity of about 925,000 tons were put into operation, more than 75 percent of them in southern and central regions of the country.

In the early 1930's, based on a government decree, the entire network of granaries and elevators (except for those in ports) was transferred to the "Soyuzkhleb" (the "Zagotzerno" since February 1932). As early as July 1933, "Zagotzerno" enterprises had available to them grain storage facilities with a total capacity of 11.8 million tons.

In March 1939, 18th Party Congress resolutions on the five-year plan for development of the national economy (1938-1942) anticipated: "Construction of a network of new grain elevator and warehouses with a total capacity of upwards of 10 million tons, thus ensuring total elimination of grain storage in bundles in the first half of the Third Five-Year Plan."<sup>3</sup> In 1939, the USSR People's Commissariat of Procurement approved for construction plans for

1. V. I. Lenin "Poln. sobr. soch." [Complete Collected Works], Vol 51, p 252.
2. "Poln. sobr. soch.," Vol 3, pp 265-266.
3. "KPSS v rezolyutsiyakh i resheniyakh s"yezdov, konferentsiy i plenumov TsK" [The CPSU in Central Committee Congress, Conference and Plenum Resolutions and Decisions], Moscow, Gospolitizdat, 1971, Vol 5, p 361.

the DL-5500 elevator, a wooden lineal elevator with a capacity of 5,500 tons of grain and the capability of expansion to 11,000 tons capacity by adding on another silo.

The granary construction program outlined by the 18th Party Congress could not be carried out due to the treacherous attack on our country by Fascist Germany. As is known, during World War II we lost 15 million tons of granary capacity. In addition to granaries, we lost many grain driers, mechanized facilities, vehicle scales and other equipment. During the liberation of temporarily occupied territory in the country, enormous work was done to rebuild and prepare the material-technical base to receive grain from the kolkhozes and sovkhozes.

The law on a five-year plan to restore and develop the USSR national economy in 1946-1950 set the task of restoring and building grain storage facilities and elevators with a total capacity of 6.4 million tons during that five-year period. That program was carried out, basically by overfulfilling the plan for building grain storage facilities.

During these years, the construction of 5,500-, 11,000-, 22,000-, 25,000- and 50,000-ton elevators with automatic transport mechanism control adjacent to railroad stations was planned. By early 1951, the prewar granary storage capacity had already been exceeded by nearly 40 percent due to the large-scale construction of mechanized warehouses.

In September 1953, February-March 1954 and January 1955, CPSU Central Committee Plenums adopted historic resolutions on further developing agriculture, on utilizing virgin and long-fallow land, on increasing grain production and procurement. In connection with these resolutions, it was necessary to do considerable work to further expand the network of grain-receiving enterprises and to build capacities at existing enterprises, especially in newly utilized virgin and fallow lands.

In 1955, plans for the L-4x175 elevator were approved for large-scale construction, and in 1959 -- the LV-4x175. These were elevators with 50,000- and 100,000-ton silos, the working towers able to handle 175 tons per hour, with six receiving passages, each with a vehicle unloader and two or three 32 ton/hour liquid-fuel drying units. At that same time, standard plans were approved for drying-cleaning towers able to handle 24, 32 and 50 tons per hour, to receive grain from vehicles, with a rail transport release device (SOB) and also grinding-cleaning towers with two 32 ton/hour grain driers (MOB). These towers were connected to six or eight 18,000 to 24,000-ton grain driers.

In 1951-1955, we put 30.6 million tons worth of granaries (including one million tons of elevators) into operation, in the Sixth Five-Year Plan -- 17.6 million tons (2.7 million tons of elevators), in the Seventh -- 21.7 million tons (3.7 million tons of elevators), Eighth -- 29.9 million tons (8.7 million tons of elevators, more than 40 percent of which were made of reinforced prefabricated concrete), Ninth -- 20.7 million tons (16.6 million tons of elevators, more than 85 percent, or 13.7 million tons, prefabricated).

In the 10th Five-Year Plan, elevators have occupied a considerable proportion of granary construction. Thus, elevators have comprised 91 percent of all granaries built during the first four years of the current five-year plan. We must not fail to note qualitative changes in this construction. Along with medium-sized 50,000- to 75,000-ton elevators, we have also been building large ones (125,000- to 200,000-ton) in Zhutov (Volgogradskaya Oblast), Podberez'ye (Novgorodskaya Oblast), Zimovniki (Rostovskaya Oblast), Karatagay (Aktyubinskaya Oblast) and Akkul (Tselinogradskaya Oblast), for example. By the end of the 10th Five-Year Plan, the proportion of elevator capacity at grain-receiving and processing enterprises of the USSR Ministry of Procurement is to have been increased to 37 percent.

In recent years, grain driers able to handle 39,200 tons per hour have been put into operation, more than 30 percent of which are of the recirculating type. More than three million tons of grain per hour can be dried at enterprises of the USSR Ministry of Procurement, reducing moisture content by six percent.

In addition to new construction, 157 elevators have been renovated in the current five-year plan. During the course of the renovation, we replaced 100 ton/hour bucket elevators with 175-350 ton/hour ones, cable vehicle unloaders with large hydraulic ones, mechanical shovels with inertial ones and other rail car unloaders.

Work continues on putting rail car scales with a load capacity of 150 tons into operation (236 were introduced, given a plan of 200), large vehicle scales to handle 30 and 60 tons (951 scales, given a five-year plan of 1,100). This year, we plan to introduce scales with platform lengths of 15 and 18 meters.

During the first four years of the five-year plan, 5,380 large vehicle unloaders were put into operation, given a five-year plan assignment of 6,000. Modern vehicle unloaders are intended to unload grain from large vehicles and truck trailers with load capacities of up to 50 tons and, very importantly, without uncoupling them.

The use of Al-UP2-A automobile samplers to sample grain has become widespread. More than 900 have been introduced during the first four years of the five-year plan and more than 2,000 are in operation.

Work continues on equipping grain warehouses with stationary equipment and aerial chutes.

In the years ahead, we plan to further develop and strengthen the material and technical base of grain-receiving enterprises. In addition to the construction of reinforced concrete elevators equipped with modern equipment, we plan to build about a third of the capacities using factory-finished metal components, which enables us to increase construction tempos and to lower expenditures. We anticipate growth and improvement in grain-drying capacity (preferential construction of recirculation grain driers able to

handle up to 100 tons per hour). Scales will be modernized in order to adapt them to weigh long, large vehicles and truck trailers.

Much work faces us in eliminating rail car and water transport idle time when loading and unloading output. We plan effective measures to introduce stationary mechanization, aerial chutes, active ventilation for elevator and warehouse grain, and the use of artificially cooled air in storing such crops as rice and brewery barley.

Labor productivity growth, reduced circulation outlays, greater work efficiency, maximum use of fixed assets -- these are the primary tasks facing workers in elevator industry in the forthcoming five-year plan. Resolution of these tasks will facilitate further improving the acceptance, processing and storage of state grain and grain-processing resources and further advancement along the path outlined by the great Lenin.

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## POST HARVEST CROP PROCESSING

### BRIEF REVIEW OF WORK OF SUGAR INDUSTRY DURING 1978

Moscow SAKHARNAYA PROMYSHLENNOST' in Russian No 10, Oct 79 pp 53-55

[Article: "Brief Review of Work of Sugar Industry During 1978"]

(Text) In recent years and for various reasons, the publication of sugar industry year-books has been delayed, books in which for a period of almost 90 years technical-economic and production work indicators of sugar plants have been published. The last year-book published was for the year 1970.

In this regard, the Editorial Board of the journal SAKHARNAYA PROMYSHLENNOST' [Sugar Industry] is receiving requests from workers attached to plants, associations and scientific-research institutes asking for this void to be filled at least through the publication of some summary data on the work of the industry.

The journal's Editorial Board, in view of this fact, considers it possible to publish some basic data on the work of the sugar industry during 1978, as well as a comparison of this data against a number of previous years. The principal indicators published -- the sugar beet sowing areas, sugar beet procurements, sugar production and a number of other indicators -- are published on the basis of data supplied by the USSR CSA, whereas some materials associated with the technical operational indicators of the industry are furnished based upon operational data of Glavsakhar [Main Administration of the Sugar Industry] of USSR Minpishcheprom [Ministry of the Food Industry].

#### Sugar Beet Sowing Areas and Procurements

In 1978, sugar beets were sown on an area of 3.76 million hectares. Compared to 1977, this figure was greater by 2,100 hectares, including in

TABLE 1

Republic, kray, oblast	Sugar beet sown area, thousands of hectares			Sugar beet procurements					
				Thousands of tons			Per hectare, in quintals		
	1978 r.	1977 r.	1976 r.	1978 r.	1977 r.	1976 r.	1978 r.	1977 r.	1976 r.
USSR	3763	3760.8	3754	80078	81881	85142	213	226	227
RSFSR	1618	1628	1613	23367	25828	24659	144	159	153
Ukrainian SSR	1811	1786	1789	47000	50554	51211	263	283	286
Belorussian SSR	52	52.5	50	1167	1227	959	223	236	192
Kazakh SSR	77	75.2	79	2491	1593	2017	324	212	255
Georgian SSR	3.5	3.5	3.5	117.5	135	130	336	340	372
Lithuanian SSR	35	34.7	34.5	683	650	553	194	183	160
Moldavian SSR	109	115.1	123	2776	2782	3651	255	242	310
Latvian SSR	11	12.2	10	201.5	262	167	183	218	152
Kirghiz SSR	41	49.1	48	1541	1662	1634	376	339	340
Armenian SSR	4.6	4.5	4.5	134	188	161	291	376	357
Bryanskaya Oblast	10	10	10	92	131	102	96	134	104
Orlovskaya Oblast	77	77	78	505	829	380	65	107	49
Ryazanskaya Oblast	39	39	39	348	390	165	90	101	42
Tul'skaya Oblast	40	40	40	344	526	177	86	132	44
Gor'kovskaya Oblast	21	21	21	138	281	224	65	133	105
Mordovian ASSR	15	15	15	2108	205	191	73	137	127
Belgorodskaya Oblast	164	164	164	3694	3346	3154	176	204	192
Voronezhskaya Oblast	250	250	252	2754	4028	4370	150	161	174
Kurskaya Oblast	191	190	190	1434	3030	2419	128	159	127
Lipetskaya Oblast	110	110	110	1136	1093	857	103	99	78
Tambovskaya Oblast	133	149	133	095	1087	1075	82	72	66
Kuybyshevskaya Oblast	16	17	16	204	180	203	124	110	124
Penzenskaya Oblast	58	58	58	445	558	509	77	97	88
Saratovskaya Oblast	20	20	19	181	124	145	92	64	75
Ul'yankovskaya Oblast	15	16	16	1148	216	168	97	138	107
Bashkir ASSR	77	73	72	151	1132	1268	149	156	176
Tatar ASSR	53	53	53	6598	746	813	128	141	153
Krasnodarskiy Kray	214	212	213	160	6017	6644	287	285	313
Stavropol'skiy Kray	44	43	44	942	883	971	212	205	220
Checheno-Ingush ASSR	9	9	9	210	170	192	223	189	211
Altayskiy Kray	62	62	61	480	856	623	78	139	102
Vinnitskaya Oblast	236	239	236	6102	6722	7322	258	245	310
Volynskaya Oblast	45	45	40	1238	1277	933	274	297	233
Dnepropetrovskaya Oblast	25	25	27	640	714	789	256	286	292
Zhitomirskaya Oblast	52	52	52	1234	1214	1356	237	234	261
Ivano-Frankovskaya Oblast	22	22	23	643	680	821	295	308	353
Kiyevskaya Oblast	120	120	120	3208	3786	3546	268	319	295
Kirovogradskaya Oblast	139	139	140	3341	3852	3560	241	277	254
L'vovskaya Oblast	49	50	50	1418	1632	1510	289	328	303
Nikolayevskaya Oblast	47	48	48	1050	1110	1156	221	234	240
Odesskaya Oblast	59	59	59	1370	1629	1362	232	276	231
Poltavskaya Oblast	168	167	169	4886	5176	5189	291	310	309
Rovensskaya Oblast	60	53	55	1701	1502	1382	284	281	252
Sumskaya Oblast	130	130	131	3110	3298	3218	239	255	247
Ternopol'skaya Oblast	136	126	127	4230	4256	4173	312	333	328
Khar'kovskaya Oblast	114	114	117	2618	2820	3425	230	249	292
Khmel'nitskaya Oblast	177	167	160	4425	3890	4276	249	233	268
Cherkasskaya Oblast	153	153	153	4170	4853	4567	273	320	299
Chernovitskaya Oblast	35	33	36	1057	931	1440	298	282	403
Chernigovskaya Oblast	44	44	45	1159	1182	1186	263	267	263

the Ukrainian SSR -- by 25,000 hectares, the Lithuanian SSR -- by 500 hectares and in the Kazakh SSR -- by 1,600 hectares. In the RSFSR, the sowing area for beets decreased by 10,000 hectares and in the Moldavian SSR -- by 6,000 hectares.

According to data supplied by the USSR CSA, 80.07 million tons of sugar beets were procured from the 1978 harvest, or 90 percent of the plan with an

TABLE 2

TABLE 2

Republic	Amount of organic fertilizer per hectare of planting, in tons		Amount of min. fertz. in standard min. fertz. per hectare, in quintals (computed using USSR CSA data)				
	1978 r.	1977	Total in 1978	Including			1977
				Nitrogen	Phosphorus	Potassium	
USSR	19	16	19.9	8.8	6.8	4.3	19.1
RSFSR	7	6	18.5	7.5	6.9	4.1	17.5
Ukrainian SSR	27	23	21.1	9.9	6.5	4.7	20.8
Belorussian SSR	75	70	14.6	5.9	4.4	4.3	14.3
Kazakh SSR	7	7	22.7	11.4	9.6	1.7	20.7
Georgian SSR	1	2	19.7	12.3	6.1	1.3	20.4
Lithuanian SSR	49	49	21.7	9.8	7.3	4.6	20.2
Moldavian SSR	23	20	16.8	7.3	7.1	2.4	16.1
Latvian SSR	32	26	32.1	12.0	11.6	8.5	27.1
Kirghia SSR	6	11	22.8	9.8	10.6	2.4	22.5
Armenian SSR	18	19	25.8	13.4	9.9	2.5	21.1

additional task, compared to 84.86 million tons in 1977 and 85.14 million tons in 1976.

Data on the sown areas and beet procurements, by union republics and beet-growing oblasti of the RSFSR and the Ukrainian SSR and for the years 1977 and 1978, is furnished in Table 1.

#### Fertilizer Applications for Sugar Beet Plantings

During the fall plowing for the 1978 sugar beet harvest and for the country as a whole, 67.78 million tons of organic fertilizers were applied to an area of 1.69 million hectares -- an average of 40 tons per hectare of fertilized area. In addition, during fall plowing and when planting the beets, an average of 19.9 quintals of mineral fertilizer in standard mineral fertilizers was applied per hectare, compared to only 19.1 quintals in 1977. However, during the course of applying the fertilizers, the required nutrient ratio was not observed on many of the farms. The beet plantings were provided with a large quantity of nitrogen fertilizers against a deficit of phosphorous and potassium fertilizers. The nitrogen fertilizers, in violation of the agrotechnical requirements, are being applied annually to the soil mainly during the second half and towards the end of the beet growing season and this adversely affects the technological qualities of the raw materials, lowers their suitability for storage, inhibits the operations of the sugar plants and increases the losses of raw materials and sugar.

Data is furnished in Table 2 on the quantity and quality of fertilizers applied in behalf of the 1978 sugar beet crop, with the information arranged by union republics.

The data in Table 2 reveals that the sugar beet plantings in a number of beet-growing union republics are not being supplied with adequate amounts

of phosphorous or especially potassium mineral fertilizers and this is adversely affecting the technological qualities of the raw materials. In particular, this is occurring in individual oblasts in the RSFSR, the Kazakh SSR, the Georgian SSR and the Armenian SSR.

TABLE 3

Republic	Sugar content upon acceptance in %			Overall contamination in %			Non-graded beets accepted, in thousands of tons		
	1978 r.	1977 r.	1976 r.	1978 r.	1977 r.	1976 r.	1978 r.	1977 r.	1976 r.
USSR	15.7	15.4	15.3	13.5	8.7	14.9	2394	4508	36637
RSFSR	15.8	15.4	15.3	11.6	8.5	11.0	1801	2953	9832
Ukrainian SSR	15.9	15.6	15.5	15.1	8.8	16.7	449	1314	24454
Belorussian SSR	16.2	16.1	15.7	11.4	9.0	9.9	5	9	630
Kazakh SSR	12.9	12.3	13.0	5.7	5.5	6.9	35	7	151
Georgian SSR	15.2	13.8	14.8	5.8	4.9	4.9	—	0.3	—
Lithuanian SSR	14.8	15.6	16.4	21.1	16.3	13.9	1.4	2.8	201
Moldavian SSR	16.9	16.2	15.2	10.0	7.0	25.3	95	213	1367
Latvian SSR	14.8	15.2	17.5	42.3	21.8	14.0	3	—	0.4
Kirghiz SSR	12.7	12.4	12.9	7.5	7.8	7.5	4.3	1	2
Armenian SSR	16.3	14.4	16.2	5.0	4.7	3.9	0.3	8	—

#### Quality of Sugar Beet Procurements

Of the 80.07 million tons of sugar beets procured during 1978, 27.08 million tons were marked by an overall contamination level of up to 10 percent, 40.39 million tons -- from 10 to 20 percent and 12.6 million tons of the beets -- more than 20 percent. According to operational data, approximately 4.6 million tons of frostbitten beets that were unsuitable for storage were delivered to beet receiving points in the RSFSR, the Lithuanian SSR and the Latvian SSR.

A large quantity of beet roots sustained severe mechanical damage, especially those received from farms where the beets were harvested using the KS-6 and RKS-6 six-row beet harvesting combines.

The quality indicators for sugar beets procured from the 1978 harvest, with comparisons made against 1977 and 1976, are furnished in Tables 3 and 4.

The beet receiving points have been supplied with large quantities of inferior beets -- mechanical damage to roots and also sour and frostbitten beets. Such conditions lead to raised losses in raw materials and sugar during processing and storage operations.

According to preliminary data, beet losses during the transporting and storage of the 1978 crop amounted to 4.23 million tons for the sugar industry on the whole, or 5.28 percent of the total amount of beet procurements.

TABLE 4

Republic	Prostbitten beets accepted, in thousands of tons			Beets having severe mechanical damage, in %		
	1978 r.	1977 r.	1976 r.	1978 r.	1977 r.	1976 r.
USSR	4548	10926	35935	8.0	7.2	6.7
RSFSR	4069	2930	9658	9.1	7.4	7.1
Ukrainian SSR	472	7304	23943	7.8	7.0	6.5
Belorussian SSR	1.5	2	615	7.5	8.9	5.3
Kazakh SSR	—	—	151	—	8.0	6.3
Georgian SSR	—	—	—	—	4.9	4.0
Lithuanian SSR	1.4	—	201	7.5	7.4	7.4
Moldavian SSR	—	660	1367	9.0	10.0	6.7
Latvian SSR	3	—	0.4	3.4	4.2	3.7
Kirghiz SSR	0.6	—	—	7.8	7.9	8.2
Armenian SSR	—	30	—	6.9	6.0	4.6

In 1978 the industry's beet receiving points had units at its disposal for the forced ventilation of sugar beets (for one-time storage of 5.7 million tons). In all, 9.6 million tons of beets were placed in storage with forced ventilation, compared to only 8.1 million tons in 1977 and a task calling for 14.5 million tons. Approximately 1.42 million tons of beets were treated with the GMK [maleic hydrazide] preparation, or 71 percent of the plan -- only 764,000 tons were so treated in 1977.

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## POST HARVEST CROP PROCESSING

UDC 632.9:631.576.331.2

### INSTRUCTIONS ON COMBATting PESTS IN GRAIN SUPPLIES

Moscow MUKOMOL'NO-ELEVATORNAYA I KOMBIKORMOVAYA PROMYSHLENNOST' in Russian  
No 5, May 80 pp 17-18

[Article by G. Zakladnoy, candidate of biological sciences, VNIIZ [All-Union Scientific Research Institute on Grain and Grain Products];  
A. Stepanov, senior engineer, USSR Ministry of Procurement: "New Instructions on Combatting Pests in Grain Supplies"]

[Text] Specialists of VNIIZ and the Main Administration of the Elevator Industry of USSR Minzag [Ministry of Procurement] have developed new instructions on combatting pests in grain supplies in consideration of criticism and proposals made by a number of subdivisions of USSR Minzag, procurement ministries and departments on the protection of grain products of union republics as well as of the achievement of science, technology and progressive experience in the work of organizing the protection of grain products. They have been coordinated with the Main Sanitary-Epidemiological Administration of the USSR Ministry of Health and confirmed by the USSR Ministry of Procurement. The instructions will be in effect as of 1 October 1980.

The instructions on combatting pests in grain supplies differ significantly from the 1965 instructions on combatting pests in supplies of grain, meal and groats.

In the new instructions structure is more organized. They consist of sections that are determined by facilities and not by the type of insecticides. The rates for pesticide use are presented in a table, which is useful for practical workers.

The introduction to the new instructions, "Measures to Prevent the Infestation of Grain and Grain Products With Pests," is very important. It presents the basic requirements for the content of grain storage facilities, storehouses of completed products, production facilities, equipment and the territories of enterprises. The fulfillment of these requirements will enable us to prevent the infestation of grain and grain products with pests and consequently to decrease their losses.

Special attention is given to the strict observance of a sanitation regiment in all storehouse and production facilities and territories; to the careful control of the degree of infestation of grain products during reception, storage and delivery; to the creation of conditions for storing grain and products that will avert the spread and development of pests in grain supplies; to performing complex disinfection operations of all free elevator-storage facilities, grain dryers, flow lines, equipment, inventory, territory and also the infested sections of grain, grain products and wastes. Emphasized was the necessity to place strict demands on kolkhozes, sovkhoses and local agricultural organs concerning the fulfillment by them of corresponding measures to prevent infestation with pests prior to the beginning of grain harvesting operations.

A list is made of the parties responsible for the sanitary condition of enterprises and for performing the necessary prophylactic jobs to prevent the infestation of grain and grain products by pests.

More basic changes were made in the section, "Chemical Measures to Combat Pests." This is related to expanding the assortment of poisonous chemicals, to the introduction of new methods and techniques for disinfecting grain and grain storehouses and to the expansion of the area in which poisonous chemicals are used. Thus, the use of very acidic preparations (cyclone D and mixture of calcium and sodium cyanide), mineral-oil emulsions of DDT (MME DDT) and caustic sodas (sodium hydroxide) has been excluded. The use of concentrates with green oil is limited and recommended only for disinfecting areas.

In addition there has been an increase in the assortment of pesticides using phosphoroorganic preparations--Malathion insecticide, DDVF, trichlorometaphos-3. The use of Gamma grains based on gamma isomers of hexachlorocyclohexane is recommended for aerosol disinfection.

New types of work have also been included--the fumigation of grain and grain products using a mixture of methyl bromide with chloropicrin and of grain with a mixture of methyl bromide and metallilchloride; the treatment of grain with Malathion insecticide; local disinfection of enterprises; disinfection of grain storage areas by means of the aerosol method; fumigation of grass seed; the use of herbicides (simazin and ammonia salts 2.4-D) to combat weeds on the territory of enterprises.

The methods of freeing grain and grain products from chemical residue and the determination of the quality of disinfection are put into separate sections for the first time.

In presenting the technological methods of disinfection, supplying organizations for the protection of grain products with new disinfection technology (4-AG, RUP-2) was considered.

The instructions determine the order and organization for making analyses of the residue of poisonous chemicals in grain products and in the air of

production facilities after chemical disinfection takes place because this is the responsibility of organizations for the protection of grain products.

The section on "Measures to Combat Rodents (Deratting)," in addition to the earlier known proposals, includes a new method of combatting rodents--the placement of long-acting poisons in places most frequently visited by rodents, using anticoagulents such as Warfarin and ratindan as bait.

For gas deratting it is planned to use not only chlorpicrin but also methyl bromide and metallilchloride, which previously was not used for this purpose.

The section "Measures of Public and Personal Safety" was subject to much rewriting. It takes into consideration the new Sanitary Regulations for the Storage, Transportation and Use of Pesticides (Poisonous Chemicals) in Agriculture, which were developed by the USSR Ministry of Health, as well as the Regulations on the Technology of Safety and Production Sanitation in Enterprises, Organizations and Institutions of the USSR Ministry of Procurement. The general proposals in this section are supplemented by the order of preparing and retraining cadres in the organization for the protection of grain products.

The section "Safety Measures When Performing Disinfection Operations" clarifies the time at which to begin and end work on disinfection, deratting, the reception and release of poisonous chemicals as well as the disposal of chemicals that can no longer be used. Additional counter-fire measures are presented for applying during the use of metallilchloride, dichlorethane and Gamma insecticide pellets. Presented here are methods for disinfecting metallilchloride, methyl bromide and chlorpicrin if degassing is difficult as a result of the accidental fall of liquid fumigants onto the floor, walls or other places that were not considered in earlier instructions.

A new system of putting structures into operation after disinfection has occurred has been established.

The section "Measures of Personal Safety, Protective Means, Sanitary Clothing, Special Food" was subject to especially great revisions. It was supplemented with a detailed description of the methods of disinfecting and washing special clothing, disinfecting special footwear and individual protective methods (gas masks, respirators, rubber gloves, etc.). There was a clarification of the order of utilizing and checking the working order of gas masks and of the length of time they could be used when working with various fumigants. A new system was established for medical examinations of individuals working with poisonous chemicals. A typical form for a medical record for an individual working with pesticides (poisonous chemicals) is presented. There is a detailed account of proposals on conducting courses in safety technology and a determination of the workers in a section for protecting grain products who are responsible for the organization and the timely and quality conclusion of necessary measures in safety technology.

The instructions on combatting pests in grain supplies have 15 appendixes, of which nine are new. The remainder have been reworked significantly and supplemented as compared with the preceding instructions.

The new instructions on combatting pests in grain supplies are a necessary guide for workers of organizations dealing with the protection of grain products, of grain-reception and grain-processing enterprises, of the State Grain inspectorate and for specialists of other organizations that are responsible for protecting agricultural products. They will significantly facilitate the matter of protecting grain and grain products from insect pests, mites and rodents in grain-reception and grain-processing enterprises, kolkhozes and sovkhozes.

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RSFSR LIVESTOCK FARMERS FACE MAJOR CHALLENGES

Moscow SEL'SKOYE KHOZYAYSTVO ROSSII in Russian No 5, May 80 pp 2-4

[Article by I. Averin and V. Baturin: "Use Animal Husbandry Reserves More Fully"]

[Text] The CPSU Central Committee devotes constant attention to accelerated development of animal husbandry. This is understandable. The party considers improving the supply of foodstuffs, especially meat and other livestock products, to the population to be an urgent priority which will require purposefulness and persistence, great responsibility, and mobilization of all our efforts and means.

The central challenge of the current year in agriculture, as noted at the November Plenum of the CPSU Central Committee, is to fulfill and overfulfill plans for the production and state purchase of all agricultural products, above all grain, meat, and milk. The kolkhozes and sovkhoses of the RSFSR have great opportunities to meet this challenge today. It is a matter of making fuller use of existing reserves, improving work quality generally, introducing scientific advances and progressive practices more energetically, and declaring a broad campaign for highly sophisticated production and efficient use of material and monetary resources at every farm, in every production sector.

Following a resolution of the RSFSR Council of Ministers, the questions of development of beef and dairy cattle raising at RSFSR kolkhozes and sovkhoses were discussed at zonal meetings held in the cities of Moscow, Rostov, Kuybyshev, and Novosibirsk. In light of the decisions of the November 1979 Plenum of the CPSU Central Committee and the conclusions contained in the report by General Secretary of the CPSU Central Committee Comrade L. I. Brezhnev at the Plenum, the meetings conducted detailed discussions of the chief problems involved with the development of livestock raising and increasing the production and state purchase of meat and milk. The speakers and others who took part in the discussions noted with great satisfaction that despite difficult weather conditions RSFSR agriculture, like that of the entire country, is continuing to advance. Gross production has risen 11 percent compared to

the Ninth Five-Year Plan, the average annual grain harvest is up 13 million tons, meat production has risen 4,570,000 tons, milk production 2 million tons, and egg production by 6 billion.

These accomplishments are a result of successful implementation of the party agrarian policy whose foundations were laid by the March 1965 Plenum of the CPSU Central Committee. The kolkhozes and sovkhoses of the republic have begun receiving much more machinery, mineral fertilizer, and other resources in recent years. Significant work is underway in the countryside on land reclamation, chemicalization, and full mechanization of production; productive capital has increased several times over. In other words, we have every opportunity to continue increasing the production of a broad assortment of high-quality food products. But, as was noted at the meetings, many kolkhozes and sovkhoses are not making full use of these opportunities. Virtually all growth in the production of meat and milk in the current five-year plan has come not from raising livestock productivity, but chiefly from increasing the number of livestock. How can we consider the situation normal when one-third of the kolkhozes and sovkhoses of the republic still get less than 2,000 kilograms of milk per cow a year? Moreover the number of farms with low productivity has increased in the last few years.

Meat supply for the population continues to be a critical problem. The demand for meat products is rising much faster than production. It was stressed at the meetings that solving this problem depends significantly on the level of beef production. It accounts for more than half of the overall balance of meat resources in the republic. The raising and feeding out of cattle is poorly organized in several oblasts and average daily gains for young animals are no more than 350-400 grams. As a result the feeding period is dragged out, feed is used inefficiently, and about 30 percent of the livestock sold to the meat combines weigh less than 300 kilograms. The average output of meat in slaughter weight per head in the republic is just 60-70 kilograms; according to the most modest calculations it should be at least 90-100 kilograms.

The primary reasons for the slow rate of development of animal husbandry are the low level of livestock feeding and poor work by many farms to increase the production and improve the quality of feeds. It is true that many kolkhozes and sovkhoses have stepped up work to build stable feed bases. Farming practices to raise feed crops have been improved, more organic and mineral fertilizer is being used for them, the structure of feed plantings has been refined, and more attention is being devoted to grass seed growing. The preparation of rough and succulent feeds has increased. But it has not been possible to solve the problem fully. Most farms still do not supply public animal husbandry with the full feed requirement.

The question of quality of feed production is unusually critical at the present time. The expenditure of feed in feed units per cow increased universally during the Ninth and 10th five-year plans, but milk productivity essentially remained at the same level. In some places it even dropped. In the opinion of scientists, this comes from a change for the worse in the structure of the forage balance and a drop in feed quality. In the Nonchernozem Zone, for example, hay accounted for 70 percent of the rough feed in the Eighth Five-Year Plan, whereas today it is just 30 percent. Pasture feeds were 25 percent of the animal diet and now they are 20. On the other hand, the share of concentrates rose substantially and is now about 30 percent. These are average figures. At farms in Sverdlovskaya Oblast and Karel'skaya ASSR the proportion of grain forage in milk production reached 37 percent, while in Mariyskaya ASSR and Vladimirskaia, Gor'kovskaya, and Perm'skaya oblasts it is 33-35 percent.

The great, unjustified increase in the share of concentrates in the cow diet along with a significant reduction in the proportion of hay and succulent and pasture feeds has unfavorable repercussions: cow barrenness increases, metabolism is impaired, and animals become sick more frequently. To avoid these undesirable phenomena we must produce rough and succulent feeds in volumes that guarantee compliance with scientifically recommended diets.

The meetings emphasized that straw must be used more efficiently for feed purposes. To do this it must be harvested on time, stacked and preserved well, treated with ammonia water, and used extensively in preparation of corn silage, adding carbamide. The problem is to see that it is all fed to the livestock only in processed form. It has been proven that thermochemical treatment improves the nutritional quality of the straw about 1.5 times. But many kolkhozes and sovkhoses do not use this technique. Only two percent of the straw at farms in Novosibirskaya and Omskaya oblasts is treated in this way, and none at all is in Altayskiy Kray and Kemerovskaya, Tomskaya, and a few other oblasts.

Improving breeding work is an important factor in intensification of animal husbandry.

A great deal has been done at kolkhozes and sovkhoses of the republic in recent years to improve breeding work. State services for breeding and artificial insemination have been organized. At the same time, work to improve the breed qualities of the livestock does not yet meet present-day requirements; in some places the work has been neglected completely. The available breeding resources are being used very poorly; breeding work to raise cow productivity and the fat content of the milk and to evaluate animals for ability to repay feed costs and for suitability for industrial feedlot conditions is not satisfactorily organized.

It is common knowledge that the breeding farms must set the tone in the development of animal husbandry and improvement of breeds. They are expected to be a model of management for the sector. Many of them are performing this role and have high indicators for their work. But it is important for all breeding plants and farms to become true centers of highly sophisticated dairy stock raising and to have a significant impact on development of the sector.

There are serious shortcomings in the use of existing resources. According to data from science and progressive practices, even with the most rigorous culling the breeding farms can sell 25-27 young pure-bred animals per 100 cows; in fact they sell up to 11 head, and even fewer in some oblasts.

Improving herd reproduction and increasing the production of young animals is a significant reserve for increasing milk and beef production at the kolkhozes and sovkhoses. Specialists have calculated that 230-250 kilograms of milk per cow a year are lost because of barrenness in the dairy herd. Livestock mortality, which far from dropping has actually increased recently in some places, causes considerable losses to the farms. Therefore, agricultural agencies must increase the accountability of animal specialists and veterinary employees for preservation of the animals and eliminating sterility in the replacement herd.

Improving the structure of the dairy herd offers significant reserves for increasing production. The experience of leading farms illustrates that the ratio of cows should be at least 50 percent in the Non-chernozem Zone and 43-45 percent in other zones. In fact it is much lower than this. With the existing herd structure many farms do not fulfill established plans for herd size, keep the animals in feeding out too long, and artificially delay the culling of cows that are unproductive and unsuitable for further use.

The process of organizing large specialized units to produce meat and milk and raise heifers has intensified. Thus, in the last four years about one-half of the total investment for development of animal husbandry was directed to construction of such enterprises through both new construction and expanding and rebuilding existing enterprises. Experience has shown that specialized kolkhozes and sovkhoses and interfarm enterprises have higher production and economic indicators. Labor productivity at them is much higher, inputs of feed and capital per unit of output are lower, and capital investment is repaid more rapidly. But having a large farm does not by itself guarantee success; it is only a precondition. Therefore, it is very important for construction of enterprises with industrial technology to be adequately substantiated economically and closely coordinated with establishment of the feed base, training of good specialists, and filling the herd with highly productive animals. Where these things are neglected,

productivity remains low, quarters often stand unoccupied, animals wear down prematurely, and as a result, despite substantial inputs, production of output is low and projected indicators are not reached for a long time. That is why closer checks should be instituted in this important work and arbitrary decisions not supported by science or practical experience should not be permitted.

Private subsidiary farms are an important reserve in improving the production of meat, milk, and other products. The time has come to pose the question of seeing that every rural family raises livestock and poultry and not only supplies its own livestock products but also delivers any surplus to the market. To achieve this the people must receive all possible assistance. Broad propaganda should be carried on to convince working people to become actively involved in private farming.

Choosing the technology for producing animal products is a special problem in the system of steps to raise livestock productivity. It should be considered that with the current level of labor productivity we will need an additional 100,000 milkmaids or more just to handle planned growth in herd size, to say nothing of needs for other occupations. Therefore, we must look for those technological concepts that will permit significant reductions in labor inputs to produce output.

We must remember that the organization of work to service and use cows correctly at the specialized enterprises is based on entirely different principles than those followed at small farms. Scientific research has shown that the bulk of the work at livestock farms using old technology is done by milkmaids, herdsmen, and other workers. But at the large complexes and farms specialists account for a large share of the labor. Unfortunately, these features are frequently disregarded, which of course has a negative effect on final results.

The meetings devoted considerable attention to establishing stable groups of workers at the kolkhozes and sovkhoses. It was stressed here that worker mobility can be overcome only when labor is well organized and fully mechanized and the job offers people, especially young people, not just a good wage but also broad opportunities to show their knowledge and abilities. Some farms do not give proper attention and concern to the people working at them. Even where it is possible, many farms have not organized daily work schedules and set up double shifts. There are broad opportunities today to secure and keep workers in the countryside; appropriations for construction of housing, cultural facilities, and domestic services have increased. This challenge now is to fully incorporate these resources, give workers in agriculture good conditions for labor and recreation, and surround them with attention and concern.

Raising the efficiency of agricultural production depends significantly on the specialists, their initiative, responsibility, and organizing

talent. We must enlarge their role, create an atmosphere in which they can work fruitfully, and orient them to finding and using internal reserves for production and strictly observing industrial discipline and scientific recommendations. We must pay better attention to the opinion of the specialists, give their initiatives every possible encouragement, support valuable proposals, and help introduce these proposals into production.

The party Central Committee has posed the challenge of raising the average milk yield to a minimum of 3,000 kilograms per cow in the near future, and to 4,000-5,000 in regions of highly developed dairy farming, and delivering cattle of at least 400-450 kilograms live weight to the meat combines. To accomplish this it is important to step up work on establishment of specialized meat production farms and see that the average daily weight gain in feeding out operations everywhere is raised to 800-900 grams.

On behalf of all the agricultural workers of the RSFSR the participants at the meetings assured the Central Committee of the CPSU that they will increase their efforts to carry out the decisions of the 25th party congress and the July 1978 and November 1979 Plenums of the CPSU Central Committee and achieve new successes in the development of agriculture and increases in the production of grain, feed, meat, milk, and other products.

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## LIVESTOCK

### UZBEK LIVESTOCK FARMS IMPROVE MEAT PRODUCTION

Moscow SEL'SKAYA ZHIZN' in Russian 11 May 80 p 2

[Article by Sh. Akmal'khanov, corresponding member of VASKhNIL and director of the Uzbek SSR Scientific Research Institute of Animal Husbandry, Tashkentskaya Oblast, Uzbekistan: "At a Heavy Weight -- Uzbek Farms Are Raising the Selling Weight of Livestock by Intensifying Feeding out and Prolonging Its Duration"]

[Text] The meat combine recently received 568 young bulls with an average weight of 543 kilograms from the Chinaz Sovkhoz. This delivery, which cannot be considered anything but outstanding, was a result of two procedures in combination: truly intensive feeding out and a marked increase in the duration of the process. These animals were 24 months old.

The kolkhozes and sovkhozes of Uzbekistan increased the selling weight of their animals by 30-40 kilograms by introducing intensive feeding out techniques. The farms of Tashkentskaya Oblast raised this important indicator to 410 kilograms, while in Ferganskaya Oblast it is 407, in Syrdar'inskaya Oblast 405, and in Andizhanskaya Oblast 402 kilograms. In addition to industrial complexes republic meat production is having increasingly good results with large-scale outdoor year-round feedlot operations.

The livestock farmers at the Malik Sovkhoz were one of the first to use this technology. Located in the Golodnaya Steppe, this large farm specializes in cotton production but produces a good deal of milk, meat, and eggs in addition. They were able to establish a stable feed base. According to long-term data the farm gets 180 quintals of alfalfa hay, 85 quintals of grain corn, and 400 quintals of bulk silage per hectare from irrigated fields. The sovkhoz supplies itself fully with rough and succulent feed and with part of its mixed feed requirement. The level of livestock diet is best illustrated by the fact that the sovkhoz averaged 4,131 kilograms of milk per cow last year on a dairy herd of 825 head. The average selling weight of cattle in the current five-year plan has held steady at 690-700 kilograms.

Using feedlots the Malik livestock farmers deliver 390-400 well-nourished, heavy steers aged 24-26 months to the state each year.

Just a few years ago the know-how of the Krasnyy Vodopad experimental station and the Malik, Khazarbag, and Bayaut sovkhoses related to selling heavy animals was little known. Today it has become standard procedure at hundreds of farms in Uzbekistan. Last year the kolkhozes and sovkhoses of Syrdar'inskiy and Kalininskiy rayons delivered 22-month old livestock to the meat combines with an average weight of more than 500 kilograms, while the farms in Bukinskiy, Galabinskiy, and Tashkentskiy (rural) rayons sold 18-month animals weighing 430-458 kilograms. The Krasnyy Vodopad experimental station of the Uzbek Scientific Research Institute of Animal Husbandry has been feeding out two-year-old animals at 550-600 kilograms for many years.

Using industrial technology developed by I. Kh. Khidirov and K. Kh. Khabibullin, scientists at the Uzbek Scientific Research Institute of Animal Husbandry (UzNIIZh) together with specialists at the industrial complex imeni Ulugbek in Samarkandskiy Rayon, the collective of this complex feeds 12,000 head of cattle to an average weight of 450 kilograms by the age of 18-20 months. The Katakurganskiy interfarm complex sells nearly 20,000 head to the state each year. About one-third of them are shipped to slaughter at 22-24 months weighing 500 kilograms and more.

To gain additional weight, republic livestock workers feed intensively and prolong the feeding out period to 20-24 months. Improved technology envisions intensive care for young animals from birth onward; at leading farms this is a firm rule. It is clear that only well-developed animals are capable, in the final feeding stage, of efficiently repaying the additional expenditures of feed and depreciation costs. This means that the first and principal condition is purposeful, intensive care of young animals. Under our conditions this involves feeds such as alfalfa, well-prepared haylage, silage corn, and concentrates -- 25-30 percent of the total diet. Waste products from industrial cotton processing are a well-known supplement. Those farms in Uzbekistan that are applying the new technology have adequate supplies of these feeds and are using them correctly.

Experience with organizing feeding out to a high selling weight also revealed the importance of confined maintenance of the animals in the concluding period. Leading livestock workers unanimously agree on the necessity of this step, which makes it possible to increase the daily weight gain to 1,000 grams and more.

Is prolonged intensive feeding justified? Does it pay off for the farm? This is an entirely natural question and demands a carefully measured answer. Here is what scientific experiments now introduced in practice show. When animals are kept in open areas to 18 months

the average weight is 439 kilograms, with a prime cost of 113 rubles per quintal of weight gain and a profit of 502 rubles per head sold. Calculated per quintal of weight gain this result required 600 feed units and 18.5 worker-hours. When the animal is kept to 24 months its weight increases to 566 kilograms, the prime cost of a quintal of output rises just 92 kopecks, and profit goes up 140 rubles. This result requires 820 feed units and 20.5 worker-hours. As we see, although inputs of labor and feed increased by 10.8 and 2.5 percent the profit from selling a quintal of livestock remained practically the same, 114.4 rubles in the first case and 113.4 in the second, while net income from the sale of each animal rose substantially.

As already mentioned, the average selling weight of cattle at farms in Kalininskiy Rayon last year was 501 kilograms. According to the figures of the rayon agricultural production administration, the animals were sold at 22 months. Each quintal of gain cost 137.7 rubles. Progressive farms had the best results. At the Karasu Sovkhoz, for example, with an average selling weight of 533 kilograms the prime cost of output was 15 percent lower. One quintal of gain cost the Rassvet Sovkhoz 115 rubles, while the cost was about 100 rubles for the groups of operators headed by Raisa Kalenova and Abduraim Kumbayev. They increased the average daily gain figures to 1,000-1,036 grams for their herds of 330 animals apiece. The collective of the Rassvet Sovkhoz now sells steers with a minimum weight of 550 kilograms. They intend to receive 2,500 tons of weight gain before the end of the year. At the Malik Sovkhoz in Syrdar'inskaya Oblast, mentioned above, the prime cost of a quintal of gain last year was 130 rubles with a selling price of 255 rubles. Calculated per quintal of gain they used 900 feed units and 16 worker-hours.

Many farms are using cross-breeding to improve the meat qualities of the herd and increase selling weight. In an extensive experiment run by U. N. Nasyrov and V. S. Rashidov, scientists at the institute, crossbred steers produced by crossing local cows with St. Gertrude bulls were fed out. The crossbred steers weighed 402 kilograms at 18 months when the purebreds weighed just 330; at two years the comparison was 540 kilograms to 405. Ten specialized meat sovkhozes in the republic are now using this technique. It will allow a significant increase in the selling weight of livestock in the near future and produce an improved beef calf for feeding out in zones of dry farming. Calculations show that the republic can double or triple the beef herd by implementing a breeding plan.

A stable feed base is essential to organize large-scale feed operations for heavy cattle. The rayons and farms mentioned above have greatly increased the yield of feed crops on irrigated land. The kolkhozes and sovkhozes of Tashkentskaya Oblast, for example, used to get 4,000-5,000 feed units per hectare; in recent years they have produced twice this figure. Feed production has increased significantly throughout the republic in the current five-year plan.

The managers and specialists of numerous farms are afraid that extending the feeding out period may disrupt the schedule for sale of meat to the state. To prevent this the entire beef herd should not be switched to extended feeding out at once; rather it should be done gradually, by groups of animals. A small supplementary reserve of young animals is being set up for this purpose.

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## LIVESTOCK

### LIVESTOCK FARMS IN TASHKENTSKAYA OBLAST MAKE SIGNIFICANT ADVANCES

Moscow PRAVDA in Russian 8 Apr 80 p 2

[Article by Ye. Grigor'yev and Yu. Mukimov, Uzbek SSR: "In Addition to Cotton -- More Output from Livestock Farms"]

[Excerpts] Livestock raising is growing steadily in Uzbekistan. The production of meat, milk, and eggs in the republic is increasing and the productivity of livestock and poultry is rising. The farm workers of Tashkentskaya Oblast have made significant advances. For the results of socialist competition in 1979 Tashkentskaya and Surkhandar'inskaya oblasts and Karakalpakskaya ASSR were awarded challenge red banners of the CPSU Central Committee, USSR Council of Ministers, AUCCTU, and Central Committee of the All-Union Komsomol. Comrade L. I. Brezhnev congratulated the livestock workers of Tashkentskaya Oblast on their accomplishment and wished them new labor triumphs.

Today we tell readers about the deeds and plans of the Tashkentskaya Oblast livestock farmers.

The sector is developing well in Ordzhonikidzevskiy, Tashkent'skiy, and other rayons of the oblast. The average annual production of meat and milk there in the last five-year plan was one-third more than in the preceding five-year plan.

Accelerated development of the sector in Tashkentskaya Oblast is a natural phenomenon. It is the result of consistent steps worked out and persistently put into practice by the Central Committee of the Communist Party of Uzbekistan. The CPSU Central Committee and USSR Council of Ministers gave considerable assistance in this by adopting the decree entitled "Steps To Accelerate the Development of Animal Husbandry in the Uzbek SSR."

Today every farm you visit will cite work at the livestock unit as one of the paramount concerns. A notable change in attitude toward animal husbandry has taken place. First secretary of the Tashkent party obkom M. Musakhanov singled out steps to intensify production and bolster the party influence on the work of collectives.

"We understand that the kolkhozes and sovkhoses need help from oblast organizations. A great deal is being done for this. Each member of the bureau of the oblast committee has been assigned to a certain rayon and visits it regularly, deciding problems on an operational basis. Each month the members of the bureau report on the situation at the livestock farms of their assigned rayons. This is a good way to give assistance and keep track of the work."

The oblast party committee also has commissions on animal husbandry and construction of livestock complexes and poultry factories. They keep track of work to fulfill the programs.

What reserves have been brought into action? F. Mun, chief animal expert at the Politotdel Kolkhoz in Tashkentskiy Rayon, emphasizes breeding work.

"Just imagine," the specialist says. "Fifteen years ago, when the herd consisted of local cows, each of them produced 2,100-2,200 kilograms of milk a year. Today we get 4,635. The feed base has hardly changed. But the herd today is composed of the black spotted breed. That is what breeding work means."

Tashkentskaya Oblast has worked out a system for reproduction and renewal of the herd. There are several breeding farms, and calf complexes have been set up in every rayon. These steps have made it possible to raise the proportion of pedigreed cattle in the herd to 99 percent. The structure of the herd is improving every year, but there are still significant opportunities here. According to calculations by specialists, increasing the ratio of cows to half the herd would make it possible to produce tens of thousands of additional tons of milk and meat from the same land area. This is on the condition, of course, that the forage base is improved also.

Feed is one of the chief concerns of the Tashkent area farms. They are working to raise the yield of feed crops. In the last five years the average annual harvest of alfalfa hay per hectare, for example, has increased almost one-third over the figure for the preceding period. There have also been qualitative changes. Not long ago people at many kolkhozes and sovkhoses did not even know what haylage was; today they lay in hundreds of thousands of tons of it each year. The oblast has dozens of units that prepare grass meal. Multiple plantings in a year and combined planting are widely practiced.

After bolstering their rear areas the livestock workers mounted an attack on the qualitative indicators of the sector. In the last 10 years the productivity of cows has risen from 1,935 to 3,320 kilograms, the average eggs per laying hen has increased from 134 to 176, and the average selling weight of cattle has gone from 287 to 410 kilograms. Labor inputs to produce output have been reduced. Work toward concentration and specialization of animal husbandry and bolstering its material-technical base has had an effect. Since 1973 40 dairy complexes with a total capacity of 28,000 head have been put in operation. A steer raising complex has been launched and 12 inter-farm feed depots are operating.

Hog raising is picking up the tempo. Sheep raising has stabilized. The productivity of the sheep herd is being raised on a planned basis.

One distinctive feature of work to form the material-technical base of dairy production should be noted. Almost all the complexes in the oblast were created by rebuilding livestock farms.

The farmers of Tashkentskaya Oblast have one other instructive practice. A very strange picture can be observed in several rayons. Everyone in the kishlaks, young and old as they say, will assemble in detachments to clean up and repair old livestock yards and put up new ones. Workers from industrial and construction enterprises take an active part in this work.

"We are bringing back the 'khashar,' the ancient custom of working together, the whole collective," explained first secretary of the Tashkentskiy Rayon party committee Yu. Talipov. "There used to be quarries here and huge dump piles. Now we have farms that produce 500,000 broilers a year. It took just 25 days to put up these structures and equip them."

Following this fine custom more than 10 poultry units have been built in the oblast in the last two years.

Reserves. Kh. Khusainov, deputy ministry of agriculture, says: "Our main reserve is people. We try to plug in as many young people as we can to solve our problems. There was a Komsomol conference in Tashkent recently, and it called on Komsomol members to become more actively involved in improving animal husbandry. From the conference 200 girls went off directly to work at livestock farms. This initiative has been followed in other rayons of the republic too."

The useful experience of the workers at Tashkent area farms is spreading in Samarkandskaya, Bukharskaya, Surkhandar'inskaya, and various other oblasts. Meat production at the kolkhozes and sovkhoses of the republic has risen 15 percent since the start of the 10th Five-Year Plan, milk production is up 32 percent, and egg production -- 44 percent.

The results of our work would be even better, however, if the partners of the livestock workers did not let them down. We have heard many complaints against construction workers, employees of the mixed feed industry, and machine builders. The livestock workers want them to become more actively involved in work to increase the production of the livestock farms.

Moreover, the farms are still not making full use of their reserves for development of this important sector. Poorly nourished cattle are sometimes turned over for sale. In some regions milk yields are low and cow barrenness is high. There are numerous problems with fodder too. Many kolkhozes and sovkhoses are far behind in feed production and introduction of up-to-date machinery. Feed is lost because of lack of good storage facilities. Eliminating these problems and putting the reserves into use will make it possible to take a new step forward in the development of animal husbandry.

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## REGIONAL DEVELOPMENT

### REPORT ON CONFERENCE OF EASTERN VASKHNIL DIVISION

Alma-Ata SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 4, Apr 80 pp 38-39

[Article reporting on the annual conference of the Eastern Division of VASKhNIL [All-Union Lenin Academy of Agricultural Sciences]: "Raising the Effectiveness of Scientific Research, Strengthening the Ties Between Science and Production"]

[Text] We know what a great effect agrarian science has on the development of agricultural production. What has been done by scientists and scientific-research institutions of Kazakhstan and Kirgiziya during the past year to further intensify farming and animal husbandry, what are the shortcomings in these activities, what hinders the extensive introduction of scientific achievements in agricultural production in Kazakhstan and Kirgiziya? All of this was discussed in detail at the annual meeting of the Eastern Division of VASKhNIL that took place in Alma-Ata.

Comrade K. U. Medeubekov, chairman of the presidium of the Eastern Division of VASKhNIL, spoke on, "The Basic Results of Research for 1979 and the Goals of Scientific Institutions in the Zone Under the Division's Jurisdiction in the Light of the Decisions of the November 1979 Plenum of the CPSU Central Committee."

Comrade M. G. Motoriko, minister of agriculture of the republic, characterized the problems of agricultural development in the republic, noted a number of basic shortcomings in the activities of scientists and scientific-research institutions on the continued intensification of farming and animal husbandry in Kazakhstan. Comrade S. T. Tursunov, agricultural minister of the Kazakh SSR, spoke about the results of work of agricultural scientific-research institutes in 1979 and the problems of the continued development of agriculture in Kirgiziya. Comrade Ye. V. Gvozdev, first vice-president of the Academy of Sciences of the Kazakh SSR, discussed the organization of complex research in the scientific institutions of the republic's academy of sciences. Comrade Zh. A. Amirkhanova, secretary of the Central Committee of the Kazakhstan Komsomol, devoted herself to discussing the participation of young scientists and specialists in the implementation of the agrarian policies of the CPSU.

Comrade A. F. Jensen, deputy director of the All-Union Scientific-Research Institute of the Grain Industry, discussed the contribution of scientists from this institute to the theory and practice of farming in dry regions.

It was noted in the speeches of participants in the meeting that the scientists and scientific-research institutes of the eastern part of the country last year directed their efforts at raising the effectiveness of scientific research and at introducing scientific achievements more widely into agricultural production on the basis of the resolution of the CPSU Central Committee and the USSR Council of Ministers, "On Measures to Further Raise the Effectiveness of Agricultural Science and on Strengthening its Ties to Production."

Scientist-agronomists and scientific-research institutes in the republic have made a certain contribution to the victory of Kazakhstan farmers, having delivered 1,262,000 poods of grain into the homeland's granaries. In the enterprises of the republic the harvests of sugar beets, rice, potatoes and vegetables have also been not bad.

A great deal of work was done by scientists and scientific-research institutions of the division on the continued improvement of the structure of sowing areas, on the effective utilization of land resources, on raising the fertility of the soil, and on the progressive technology of cultivating agricultural crops.

For example, the research conducted during the past year under conditions of non-irrigation and dry-farming technology confirmed the high degree of effectiveness of clean fallow, which secured a productivity of 23-42 quintals per hectare of winter wheat in tests in southern Kazakhstan as compared to 10-13 quintals per hectare using non-fallow predecessors. In the northern part of the republic a yield of 33.6 quintals per hectare of spring wheat was achieved.

The level and effectiveness of breeding work has grown. New, more productive varieties of grains and other crops are being developed. Breeders of the All-Union Scientific Research Institute of the Grain Industry and of the Karabalykaya and Karagandinskaya test stations, for example, have been working on the development of new varieties of intensive spring wheat producing strong grain and adapted to the severe climate of Northern and Central Kazakhstan.

It was said at the meeting that from this one can conclude that the level of scientific work on breeding and seed farming of agricultural crops still does not fully meet the growing needs of modern intensive farming.

The productivity of grain spike crops cultivated on dry-farming and non-irrigated lands is still low. Moreover, some varieties of grains are not sufficiently resistant to lodging, rust and other diseases, and some new varieties do not have a high potential productivity.

The main reasons for low productivity in many enterprises of the republic are the low level of quality in farming, the slow assimilation of crop rotations and the subjection of still large areas to wind and water erosion. It was noted at the meeting that the duty of scientists consists of more broadly and more actively introducing a system of soil-conservation farming while observing all of its elements such as the introduction and assimilation of recommended schemes of crop rotations, methods for combatting wind erosion, field conservation forest development and the efficient utilization of fertilizers.

Irrigated farming plays a large role in agricultural economy. Now in Kazakhstan there are 1,760,000 hectares of irrigated lands. Occupying only 1 percent of the sowing area of the republic, they yield almost one-fifth of gross agricultural production. Irrigation guarantees large yields of all crops cultivated on these lands. The conference emphasized that science is obliged in coming years to provide production with highly productive varieties of winter and spring wheats for cultivation on irrigated fields in the republic, to develop recommendations on obtaining programmed yields of rice, winter wheat, sugar beets and corn on irrigated lands. The best variants of last year's tests secured a yield of wheat on irrigated land of 65 quintals per hectare, of corn for grain--up to 120 quintals per hectare, corn for silage--up to 1,000 quintals per hectare and sugar beets--75 quintals per hectare. The conference emphasized that these indicators must be made accessible by all enterprises in this zone of the republic.

In connection with the presence of serious shortcomings in the use of irrigated lands and water resources in this zone and with the necessity to eliminate them as soon as possible, the conference recommended to scientific collectives, especially the Kazakh Scientific-Research Institute of Rice and oblast agricultural test stations, to take immediate measures to introduce the most progressive methods of irrigation into production including counter-filtration surfacing of irrigation canals, and to develop measures that will facilitate a lessening of water evaporation from the surface of reservoirs and enabling us to utilize sewage and waste water for irrigation.

The participants in the conference noted that the introduction of scientific achievements into production practices requires further improvement. It was noted in particular that there are many valuable scientific elaborations, the effectiveness of which was proven in leading enterprises, that have not found their way to fields and farms. The main reason for this is that the question of planning the introduction of the results of scientific work into the practices of enterprises has not been finally answered.

The conference ascertained that scientists and scientific-research institutions have made a definite contribution toward the continued intensification of animal husbandry in the republic. At the present time in the republic there are 54 successfully-operating complexes on milk production, seven complexes and 164 special economic associations on

raising and fattening large-horned cattle and 400 complexes and feedlots for raising and fattening sheep. In this branch of agricultural production work is being done to improve and develop new lines, plant types, breed groups and breeds of agricultural animals, to develop industrial production technology for this branch of the economy, on production and feeding and on the prevention and treatment of animal diseases.

It was noted at the conference that the greatest achievement of Kazakh scientists and livestock farmers during the past year was the completion of long-term breeding and genetic work on the development of a new breed of curly-haired sheep combining the semi-fine crossbreed wool type with curly which was approved by the USSR Ministry of Agriculture as a separate breed.

In the scientific institutions of the division research is being conducted on further finding progressive production technology for animal production output on an industrial basis. Problems that have been worked on included the scientific bases for the efficient feeding of animals, questions of processing feeds into livestock products under conditions of extensive farm mechanization, problems of reproduction and of artificial insemination.

At the conference it was said that the July 1978 Plenum of the CPSU Central Committee gave special attention to the problem of the accelerated development of animal husbandry. The November 1979 Plenum of the CPSU Central Committee again emphasized the necessity of increasing the production of meat, milk and other products and complexes as soon as possible to more fully satisfy the needs of the people.

It was said at the meeting that our republic has a great and responsible task, that of increasing the herd of sheep and goats to 50 million head in the near future, in accordance with the instructions of the General Secretary of the CPSU Central Committee and Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev. With this goal, the CPSU Central Committee and USSR Council of Ministers passed a resolution, "On Measures to Develop Sheep Raising in the Kazakh SSR," which determined specific ways of solving this important state task. Scientists and livestock farmers of the republic are obliged to strengthen improvements in selection-breeding work in sheep farming, to more rapidly find more effective ways of utilizing pedigree resources, to more broadly utilize various methods of crossing animals in order to increase fertility and rapid maturity in animals as well as their meat and wool output.

In examining the results and projections of scientists of the division in this branch, the participants in the meeting discussed with great interest the ways and methods of solving urgent scientific-technical and practical problems related to raising the effectiveness of sheep farming and to theoretical and experimental research on this problem.

In a speech at the November 1979 Plenum of the CPSU Central Committee, Comrade L. I. Brezhnev pointed to the necessity to direct all work at further

improving the effectiveness of all branches of production and at achieving the best final results. It was emphasized at the conference that this requirement must become the direction for scientists-agronomists and scientific-research institutions of the VASKhNIL division. They must continue to concentrate their efforts on the development of the theory and practice of putting animal husbandry on an industrial basis, on the future of selection and breeding work, on securing the development of large areas of highly productive herds of agricultural animals that are accustomed to reproduction under conditions of industrial technology, on the development of a system of maintaining and feeding animals, and on easing labor in this branch with the aim of raising its productivity. Work on improving existing and developing new lines, plant types, breed groups and breeds of large-horned cattle, sheep, horses, hogs and fowl and on dealing with other important problems within the branch should be accelerated.

The conference noted that under conditions in which animals are maintained on an industrial basis the scientifically based feeding of the animals using full-value feeds balanced in protein becomes of primary importance.

In this regard a great deal has been done by scientific institutions. In production, for example, there is widespread use of scientific recommendations on the development of haylands and pastures, on the preparation of haylage, vitaminous grass meal, granulated and briquette feed and on enriching feed rations with various protein supplements. Methods have been developed for the reclamation cultivation of various types of solonchaks soils enabling farmers to increase their productivity by a factor of 3-5 and produce 6-8 quintals of barley grain per hectare and 8-15 quintals of dry hay. Nevertheless, producers are awaiting highly-productive varieties of feed crops from breeders. It is the task of scientists and testing and scientific-research institutions, it was said at the meeting, to supply the kolkhozes and sovkhozes of the republic with good quality seeds. It is essential to transform seed farming into a specialized branch on an industrial basis.

The shortage of feed protein is one of the main reasons for the lags in the continued growth of productivity in livestock and for the drop in the cost of livestock production. The conference called upon scientists-agronomists to activate scientific research on this problem in all directions. The main thing, naturally, is increasing the production of vegetable protein, increasing productivity and expanding crops of alfalfa, sainfoin, peas, vetch, soy and other high-protein crops. This was discussed in detail by academician Comrade Yu. D. Zыkov and by the director of the Kirgiz NITI [Scientific Research Technological Institute], Comrade M. I. Imankulov. Recently, it was noted at the conference, there have been positive results in the work on studying and generalizing the most effective forms of organizing agricultural production and interfarm and agroindustrial cooperation and on improving economic relations and other problems of organizing production and administration. The resolution of the CPSU Central Committee and the USSR Council of Ministers, "On Improving the Planning and Strengthening of Effectiveness of the Economic Mechanism to Improve Production Efficiency," has become the guiding document for scientists-economists and agronomists.

The conference demanded that the scientific-research enterprises of the region under the division's jurisdiction increase their efforts to solve problems and to render practical aid to producers in managing specialized meat and dairy animal husbandry, in effecting its transition to an industrial base and in significantly increasing its productivity.

Attention was given to raising the responsibility of directors of scientific institutions and their experimental enterprises having agricultural farms and to the low level of breeding work. The conference demanded they raise the level of this work and improve its effectiveness and that they unconditionally fulfill the plans for raising and selling pedigree calves.

The resolution that was passed presented specific measures to eliminate the noted shortcomings and violations in the activities of scientific institutions. Tasks were placed before them to concentrate efforts of scientists-agronomists on the elaboration of the most urgent problems of agricultural science. They are called upon to accelerate the pace of scientific-technical progress in all branches of agricultural production.

The socialist obligations for the Eastern Division of VASKhNIL were accepted.

The conference called upon the scientists of agricultural scientific institutions and higher educational institutions in Kazakhstan and Kirgiziya to mobilize and direct all their efforts at the timely and high-quality solution to important problems in science and production. It is the duty of scientists-agronomists to mark the 60th anniversary of the republic and the Communist Party of Kazakhstan as well as the final year of the 10th Five-Year Plan with new successes, new achievements in raising the effectiveness of scientific research and with strengthening the ties between science and production.

Participating in the annual conference of the Eastern Division of VASKhNIL were the secretary of the Central Committee of the Kazakhstan CP, Comrade Yu. N. Trofimov, the vice president of VASKhNIL, Comrade L. K. Ernst, the deputy director of the department of science and educational institutions of the Central Committee of the Kazakhstan CP, Comrade V. I. Romanov, and the responsible worker of the Kazakhstan CP Central Committee, Comrade N. Kulgarin.

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## REGIONAL DEVELOPMENT

### IMPROVEMENTS IN CROP FARMING SKILLS IN VOLGA AREA URGED

Saratov STEP'NYYE PROSTORY in Russian No 3, Mar 80 pp 2-11

[Article by V.D. Pannikov, Vice President of the All-Union Academy of Agricultural Sciences imeni V.I. Lenin and VASKhNIL Academician: "Raising the Quality of Farming -- the Correct Path for Stable Harvests"]

[Text] On 15 and 16 January of this year, the ministries of agriculture for the USSR and the RSFSR, the All-Union Academy of Agricultural Sciences imeni V.I. Lenin and the All-Russian Branch of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V.I. Lenin] conducted a zonal conference for agricultural workers in the city of Saratov. During this conference, an examination was undertaken of measures aimed at raising the efficiency and stability of farming in the Volga economic region and in Orenburgskaya Oblast.

The following individuals participated in the work of the conference: 1st secretary of the Saratovskaya Oblast CPSU Committee V.K. Gusev, the head of a sector in the Agricultural Division of the CPSU Central Committee V.I. Loskutov, responsible workers of the ministries of agriculture for the USSR and the RSFSR, oblast committees and oblast executive committees and oblast and rayon agricultural production administrations, the leaders and chief agronomists of leading farms and workers attached to scientific and educational institutes of an agricultural nature in the Volga zone and in Orenburgskaya Oblast.

The conference was opened by the Deputy Minister of Agriculture for the RSFSR B.P. Martynov. The First Secretary of the Saratovskaya Oblast CPSU Committee, V.K. Gusev, delivered a welcoming speech to those in attendance.

Twenty five individuals participated in the debates on the report delivered by the Vice President of the All-Union

Academy of Agricultural Sciences imeni V.I. Lenin and Academician V.D. Pannikov and on the co-reports delivered by the director of the Scientific Research Institute of Agriculture for the Southeast and Candidate of Economic Sciences M.M. Popugayev and the rector of the Volgograd Agricultural Institute and Corresponding Member of VASKhNIL G.Ye. Listopad.

Speeches were delivered during the conference by the head of a sector in the Agricultural Division of the CPSU Central Committee V.I. Loskutov and by the Deputy Minister of Agriculture for the RSFSR B.P. Martynov.

The principal positions set forth in the reports and speeches delivered by those participating in the conference are published in this issue.

Under the direction of the Communist Party, our Soviet people are consistently implementing the decisions handed down during the 25th CPSU Congress and they are selflessly striving to carry out successfully the tasks of the Tenth Five-Year Plan. The workers in the Soviet countryside are conducting a persistent campaign aimed at achieving unconditional fulfillment of the decisions handed down during the July (1978) and November (1979) plenums of the CC CPSU, with regard to raising still further the production of crop husbandry and animal husbandry products.

The party is consistently implementing the program of modern agrarian policies developed during the March (1965) Plenum of the CPSU Central Committee, the second stage of the Leninist cooperative plan. During the last 4 years alone, the rural areas have been supplied with 1.5 million tractors, 426,000 grain harvesting combines, more than 1 million trucks and 317 million tons of mineral fertilizers. Improvements in the material-technical base of the farms and in the labor activities of rural workers have made it possible to raise the average annual harvest of grain in the country to 209 million tons, or almost 27 million more tons than the figure for the Ninth Five-Year Plan. Even last year, an extremely dry year, 179 million tons of grain were harvested. This was only 2.5 million tons less than the average amount harvested during the previous five-year plan.

The workers in the Volga region and in Orenburgskaya Oblast have achieved definite and positive results. In the Volga region, the average annual production of grain during 4 years of the current five-year plan increased by almost 5.5 million tons and in Orenburgskaya Oblast by 2.1 million tons, or by 24.2 and 48.5 percent respectively.

During the Tenth Five-Year Plan, grain production increased as follows: in Astrakhanskaya Oblast (45.5 percent), Volgogradskaya Oblast (37.8 percent), Ruybyshevskaya Oblast (35.5 percent), Bashkir ASSR (38.5 percent) and in the Kalmyk ASSR (34.8 percent). Lesser results were achieved by the workers in

Ul'yankovskaya Oblast (8.7 percent) and the Tatar ASSR (12.0 percent). In Penzenskaya Oblast, almost no increase in the production of grain was observed during the past 10 years.

During 1978, a year marked by favorable weather conditions, approximately 50 million tons of grain, or more than one third (35 percent) of the gross production of grain in Russia, were harvested in the Volga region and Orenburgskaya Oblast. This was the first time that such a level of production had been achieved. Grain procurements increased accordingly, amounting to 40 percent of the commodity grain for the Russian Federation.

The positive results achieved throughout the region in recent years were associated mainly with having strengthened the material-technical base of the kolkhoses and sovkhoses, improvements in the training level for specialists and machine operators, an expansion in the scales for introducing scientific achievements into operations and improvements in the economic mechanism on the whole.

At the same time, special emphasis should be placed upon the fact that we are still sustaining considerable shortfalls in output during years marked by extremely poor weather conditions. The costs resulting from the caprices of weather are extremely high here. For example, in 1978 the average cropping power in Saratovskaya Oblast was 20.4 quintals per hectare and in 1979 -- only 6.7 quintals per hectare; the figures for grain being delivered to the state granaries were 5 million tons and 0.7 million tons respectively. Thus, rather good harvests are obtained here during years marked by favorable weather conditions, whereas during unfavorable years the work of farmers is reduced to zero. However, there are some farms in the oblast which have learned how to obtain high and rather stable yields of grain and other agricultural crops each year. For example, during the 1976-1979 period the Sovetskaya Rossiya Kolkhos in Fedorovskiy Rayon of the Saratov Trans-Volga region obtained an average grain crop yield of 17.2 quintals per hectare, whereas the average for the oblast was only 12.5 quintals.

The experimental farms of the Scientific Research Institute of Agriculture for the Southeast, from their entire area sown in grain crops (60,000-63,000 hectares), annually obtain a yield that is 4-7 quintals per hectare higher than the average for the oblast. Despite the smaller proportion of grain crops in the plantings of experimental-demonstration farms, the production of grain per 100 hectares of arable land during the 1971-1975 period amounted to 911 quintals and for oblast farms only 710 quintals. During the 1976-1979 period, the figures were 1,098 and 808 quintals respectively, or 300 quintals less. The list of such examples could be continued at some length for other oblasts. What do these facts indicate? They indicate that high and stable yields can and must be obtained even in the face of severe drought conditions, with farming being carried out on the basis of scientific achievements and leading practice. What then must be done? First of all, improvements must be realized in the culture of farming and in the culture of a farmer-machine operator.

## Culture of Farming -- An Indispensable Condition for Increasing the Production of Crop Husbandry Products

Climatic conditions in the Volga region and in Orenburgskaya Oblast are extremely severe; here droughts are a frequent phenomenon. And whereas in those regions of the country where more favorable weather conditions prevail, a blunder in farming is not critical, here such blunders can have almost a fatal effect. An examination of numerous materials on the experience of leading workers in the Volga region and scientific institutes indicates that it is fully possible, under drought conditions, to obtain grain crop yields on the order of 2.5-3 more tons of grain per hectare or equivalent quantities of other crop husbandry products. This experience reveals that the task of raising the yields for grain and other crops can be solved not just by one method, but rather by an entire complex of measures aimed at combating droughts, achieving a correct alternation of crops in crop rotation plans, implementing improvements in the cultivation of fields, achieving maximum moisture accumulation and retention in the soil, employing a rational system for fertilizer applications and carrying out all agrotechnical work out on the fields in a high quality manner and during the best periods, that is, based upon improvements in the culture of farming.

Typical features of a high culture of farming include, first of all, constant concern on the part of the farmers for raising soil fertility and on this basis achieving high and stable yields and also providing reliable protection for the crops against weeds, pests and diseases. The General Secretary of the CPSU Central Committee, Comrade L.I. Brezhnev, stated: "We are obligated, comrades, both today and in the future, to display concern for constantly implementing measures aimed at improving the fertility of the land, thus enabling us to obtain high and stable yields. Such yields should serve as a guarantee that more or less uniform gross harvests will be obtained for our grain, technical, forage and other crops." We are all aware that land is a priceless wealth of our society. It is characterized by one remarkable property -- instead of decreasing, its fertility increases with the passage of time. But this occurs only when the land is properly cared for by the proprietor and only if he possesses good agricultural knowledge and employs it zealously in carrying out his work. The kolkhozes and sovkhozes in our region have great opportunities at their disposal for increasing the fertility of their land.

In addition to mastering the operation of their machines, it is important for machine operators to know what must be done from a practical standpoint in order to raise the fertility of their fields. It is absolutely mandatory for each farm to be guided by this condition.

Extreme importance is also attached to ensuring strict observance of the agrotechnical measures required for the accumulation and retention of moisture in the soil. It is readily recognized that the campaign to retain moisture in the Volga and Orenburg regions is in fact a campaign aimed at improving the harvest. In this regard, special emphasis should be placed

upon the fact that the protection of soil against wind and water erosion is a most important prerequisite for farming stability and efficiency and an irreplaceable means for accumulating and retaining moisture in the soil, for creating good physical properties in the soil and for improving its agronomic structure. These problems are of great importance, since we are speaking here of the very foundation for agriculture -- soil -- and it follows, the foundation for life here on earth. Owing to a number of objective and subjective factors, the erosion processes have assumed great proportions. These processes are rooted in the peculiarities of the climate, the relief, the soils themselves and in the productive activities of man. Erosion always commences in those areas where the soil is dried out, exposed or pulverized. These processes are accelerated by a number of processes: intensification of farming, plowing of lands in all areas, particularly on slopes and light textured soils, tilling of soils repeatedly throughout the year and heavy workloads per unit of pasture. Indeed, it is well known that intensification must be accompanied by an appropriate change in farming organization and technology.

Although the measures for preventing erosion are specific for various conditions, they must nevertheless always be complex in nature, for there has never been nor will there ever be a panacea for all of the problems that may arise. This complex includes organizational, biological, agro-technical, hydraulic engineering, forest reclamative and other measures. Some of the simplest, more effective and less costly agrotechnical measures include: soil-protective tilling of the soil with stubble retention, strip arrangement for plantings, regrassing of severely eroded tracts and slopes, tilling of soil crosswise to the slopes or following contour lines and snow retention work. In this regard, importance is attached to carrying out all of the required measures for accumulating snow out on the fields during the winter and, during the spring, to completing all work associated with retaining moisture in the soil and preventing the run-off of thaw waters and to working the land in a manner so as to promote the retention and rational utilization of moisture by the cultivated plants. These measures will provide reliable protection for soils against erosion.

Intra-farm requirements, including, the planned level of development for productive animal husbandry and also unconditional fulfillment of the tasks for selling grain and other agricultural products to the state, can be met through the proper utilization of all agricultural lands (arable land, haying and pasture lands, each hectare of land) and through the use of a structure for the areas under crops and also crop rotation plans and agricultural crop varieties which will provide a farm with the greatest economic results.

During the course of practical work, constant observance of the laws of farming is required not only when implementing measures aimed at raising the productive strength of the land and utilizing its wealth in a rational manner, but also for the purpose of ensuring that the operation of the agricultural equipment will produce the greatest results and that each

ruble and each quintal of fertilizer invested in the soil returns a maximum increase in yield.

A number of scientific principles have been established: the law of a minimum and optimum, the law of the return of nutrients to the soil and the law of the interaction of factors associated with the development and growth of plants and others. Moreover, it should be remembered that an overall property of the laws of nature is that they do not change and that the only guaranty for the success of any measure in farming is full conformity of that measure with these laws. No work carried out in the agricultural field will be successful if it is not reinforced by firm knowledge of these laws or by their observance in operational practice.

Thus farming embodies the following in the form of inalienable elements: culture of fields, culture of haying lands and culture of pastures. All agricultural measures are developed taking into account the requirements of the laws of live and inanimate nature and particularly the laws of farming. This must become a mandatory principle underlying the work of each specialist, each machine operator and each individual who works the land.

While attaching special importance to the culture of farming in the campaign to increase the production of grain and feed and to raise the stability and efficiency of farming, let us examine the principal means for realizing and utilizing the available potential for achieving high yields for grain and other crops in the Volga region and Orenburgskaya Oblast.

#### Principal Scientific Achievements in the Region

During the past few years, the scientific institutes in the Volga region and Orenburgskaya Oblast have achieved considerable results in developing the agricultural science. A number of valuable recommendations for reducing the adverse effects of droughts have been introduced into operations.

During 4 years of the Tenth Five-Year Plan, 61 varieties of 12 field crops were developed and turned over for state strain testing by experimental institutes in the zone. Of this number, 13 were developed and turned over in 1979. Twenty four varieties were regionalized during the period mentioned, including six spring wheats, six millets and two varieties each of winter rye, peas and corn.

The following varieties are being introduced into production operations most successfully: Saratovskaya 42, Saratovskaya 46 and Krasnokutka 6 spring wheats; Chuplan and Saratovskaya 4 winter ryes; smut resistant Saratovskaya 2 and Volzhskoye 3 millet varieties; Chishminskiy early and Chishminskiy 242 pea varieties.

It bears mentioning that the new varieties differ qualitatively from those developed earlier in terms of the important economic-biological characteristics and they meet the requirements for non-irrigation and

irrigation farming. In the Volga region and Orenburgskaya Oblast, the spring wheat varieties bred by scientists in the region occupy 76 percent, winter rye -- 68 percent and millet -- 95 percent of the areas used for growing these crops. In addition, varieties developed at the Volga Plant Breeding Center occupy a large area in Kazakhstan.

Systems were proposed by the scientists for employing fertilizers in crop rotation plans. These systems ensure an increase of one third in the productivity of such plans.

Under irrigation conditions, an optimum fertilization system is available for a grain-fodder crop rotation plan for obtaining programmed yields: alfalfa hay -- 120 quintals per hectare, winter wheat grain -- 50-60, spring wheat -- 40 and corn fodder -- 600 quintals per hectare.

A highly effective technology was also developed for local applications of fertilizers. However, quite often the full effect from the use of new means and methods for applying fertilizers is not achieved in production mainly owing to a shortage of highly productive manure spreaders and machines used for applying fertilizers locally and also owing to a lack of proper labor organization on the farms.

The scientific-research institutes have improved the soil-protective cultivation technology, which protects the soil rather well against erosion and at the same time serves as a means for combating droughts. Although the effectiveness of this technology has been proven here, its introduction into production operations on a more extensive scale is being delayed by a shortage of anti-erosion implements and their low productivity.

More productive grain-fallow-row crop and grain-fallow crop rotation plans have been developed by scientist-farmers which provide higher grain yields per hectare of arable land, for various weather conditions throughout the year.

Effective measures for combating weeds had been studied and recommended for production operations.

#### **More Daring Introduction of Leading Agricultural Practices Into Field Operations**

The climatic conditions in sub-zones of the Volga region are extremely diverse. They are particularly striking in terms of the amount of precipitation that falls: from 400-500 millimeters in the forest-steppe sub-zone to 180-280 millimeters in the semi-desert steppe region. The recurrence of droughts of all types, in the dry steppe regions, amounts to an average of 60 percent of the years. One peculiarity of the semi-desert steppe zone is the frequent repetition of persistent droughts (more than 27 percent of the years) and late droughts (more than 23 percent of the years). Hence, a skilful system of farming: structure of the area under

crops, agricultural practices for the growing of crops, fertilizers, measures for protecting fields against erosion and for accumulating and utilizing soil moisture properly -- in the final analysis is determined to a considerable degree by successful work being carried out in each climatic zone in the region.

In connection with the drought conditions experienced in the zone, great importance is attached to the establishment of an optimum structure for the winter and spring fields for grain and other crops, which impose various requirements with regard to moisture accumulation throughout the growing season. On the basis of data accumulated over a period of many years by scientific institutes and also leading practice, winter rye and winter wheat, in their capacity as productive and drought-resistant crops, determine to a considerable degree the effectiveness of grain production operations, in a majority of the regions in which these crops are grown, provided they are grown following clean fertilized fallow with windbreak strips.

The high productivity and resistance of winter and spring crops to drought conditions, when grown following clean fallow, are based upon the use by the crops of the precipitation from two agricultural summers -- periods of fallowing and vegetation.

On the basis of average data accumulated over a period of many years, prior to the sowing of the winter crops and depending upon the soil and climatic conditions, from 200 to 110 millimeters of productive moisture accumulate in the one and a half meter layer of bare fallow soil. That is, in all regions of the zone there is sufficient moisture in the fallow for obtaining 11-20 quintals per hectare and, taking into account the precipitation that falls during the growing season, as much as 35 and even 40 quintals of grain per hectare can be obtained.

The productivity of winter grains is greatest during years marked by acute drought conditions, when they are grown following clean (bare) fallow. For example, during the dry year of 1979, a winter rye yield of 18 quintals per hectare was obtained following clean fallow at the Kolkhoz imeni Chapayev in Atkarskiy Rayon (chernozem-steppe zone of the Saratov right bank) and following non-fallow predecessor arrangements -- 3.6 quintals per hectare. At the Krasnyy Partizan Kolkhoz in Novouzenskiy Rayon (highly arid steppe of the Saratov left bank), the figures were 15.0 and 1.5 quintals per hectare respectively.

It would appear that the problem of clean fallow is no longer a controversial one. It was clarified long ago for science and also for domestic and international practice. The introduction of such fallow for use under drought conditions is being restrained for two reasons: first of all, because of imperfections in our planning, which does not adequately take into account the totality of the complex objective conditions and local peculiarities and also the continuing orientation towards extensive factors

of development and, secondly, the incomplete approach with regard to the use of fallow. Fallow is good and effective only in those instances where it is tilled in a high quality manner, supplied with the required fertilizers and maintained in a clean condition. During years marked by favorable moisture conditions, the cropping power following fallow is 25-40 percent higher than that following non-fallow predecessor arrangements and during unfavorable years from the standpoint of moisture -- higher by 2.5-4 times and more.

Fallow land ensures growth in cropping power, with modern intensive varieties, when fertilized adequately on fallow land, producing up to 80-90 quintals of grain per hectare. Fallow precludes the possibility of crop losses during extremely unfavorable years, it raises the protein content in the grain, it reduces seed expenditures, it lowers the requirements for harvesting equipment and it promotes an increase in feed yields owing to the use of straw. Moreover, the residual effect of fallow continues for 3-5 years. By raising the stability of farming, fallow reduces the possibility of economic slumps during dry years and it makes it possible to eliminate the importing of grain during unfavorable years. All of these factors serve to emphasize one point: the basis for stable growth in the production of grain and other farming products in the Volga region and Orenburgskaya Oblast is that of increasing the area of winter grain crops and clean fallow.

According to data furnished by scientific institutes, the proportion of the area used for winter crops in the forest-steppe regions should ideally be raised to 25-28 percent, in the chernozem steppe -- to 20-25 percent and in the kashtanovyy steppe -- to 13-17 percent of the arable land under cultivation. For the Volga region on the whole and in accordance with the recommendations of local scientists and specialists, the overall area of winter crop plantings should in the next few years be increased to 5.4-5.6 million hectares, or an increase of 1.4 times compared to 1976-1978. We fully share their point of view.

At the same time, such an increase in the winter fields is possible only if appropriate growth takes place in the area of clean fallow. In the Volga region, there must be no less than 3.2 million hectares of fallow land annually and in Orenburgskaya Oblast -- on the order of 900,000 hectares. Actually, in recent years the farms in the Volga region have had 1.4-1.8 million hectares of clean fallow and in Orenburgskaya Oblast -- approximately 350,000 hectares. During these years, only 18-27 percent of the winter crops were sown following clean fallow, with the remainder being sown following occupied and non-fallow predecessor arrangements. As a result, the winter crops did not produce the results expected by the farms. In addition, greater contamination of the fields by suckering weeds and also wild oats was noted. And, as is well known, weeds serve as a type of indicator of the level of the culture of farming. Where there are many weeds, it follows that the culture of farming is low and, conversely, an absence of weeds indicates that the work is going forward in a knowledgeable manner, that the system of farming has been organized on a strict scientific basis and that the yields are increasing in a steady manner.

In discussing an increase in clean fallow, I would like to direct your attention to the following. The higher the proportion of clean fallow, the more attention we must give to the culture of farming and to the system of farming on the whole. Any deviation from the scientific recommendations in this regard involves an increase in risk in connection with obtaining high and stable yields. The power availability of the farms is rather high at the present time and the agricultural specialists and machine operators have improved their skills considerably. Soviet science has accomplished a great deal in developing the theoretical principles of farming. Thus an increase has taken place in the reserves for raising the culture of farming. The observance of all of the agrotechnical requirements has become a definite reality. Hence, we are fully justified in employing clean fallow extensively as an important factor for accumulating moisture, as a means for clearing fields of weeds, as a guarantee for obtaining stable and high yields and also for lowering substantially the expenses borne as a result of the caprices of nature. I would like to emphasize the thought that clean fallow must necessarily be supplied with fertilizer, since fallow fields are better supplied with moisture and thus the effectiveness of mineral fertilizers is considerably higher here. All of these truths are well known to the farmers and at the present time, if you please, there are none who oppose an increase in clean fallow lands. The task is one of putting words into action.

The results of studies and an analysis of practical harvest data at kolkhozes and sovkhozes dictate a need for planting roughly one half of the winter crops in the right bank chernozem rayons following clean fallow, on Zavolzhskiy chernozems -- 70-80 percent, in the Bashkir ASSR -- 75-80 percent. In the Zavolzhskiy steppe rayons, the winter crops should be planted only following clean fallow.

An increase in the crop rotation plans of winter crop areas sown following clean fallow is solving still another important task: one of the best predecessor crops for spring wheat and sugar beets is being introduced in the form of fallow winter crops. In this instance, the cropping power of spring wheat increases by 2-4 quintals and sugar beets -- by 25-30 quintals per hectare, with a simultaneous increase in the quality of the output.

In order to ensure great stability in the gross yields of grain, the crop structure must call for the cultivation of late spring crops (corn, sorghum, millet), which utilize summer precipitation very well and which are less sensitive to spring drought conditions than are the early spring crops. In the interest of increasing the production of feed protein and improving the occupied fallow and non-fallow predecessor crops for winter crops, the areas sown in pulse crops should be expanded and they should be increased in the forest-steppe zone to 9-12 percent and in the chernozem steppe -- to 6-9 percent of the arable land under cultivation.

Taking into account the arid conditions that prevail in the zone, of the complex of factors affecting the formation of agricultural crop yields,

decisive importance is attached to ensuring that moisture is made available for the plants. Thus the entire system of soil cultivation must be subordinated primarily to solving this task and also to destroying weeds.

The schedules for carrying out the principal soil cultivation play a leading role in the agricultural practices, especially during dry years. Early cultivation makes it possible to accumulate 45-60 more millimeters of moisture, compared to late autumn plowing. In addition, early fall plowing makes it possible to destroy weeds using mechanical means. Deep cultivation increases the water absorbing capability of the soil and ensures increases in yields. However, there is no need for annual deep plowing of all fields. Studies have shown that deep cultivation (to 28-30 centimeters) on tamed meadow-chestnut soils and on leached chernozems should be repeated every 2-3 years and on standard (carbonate), common and southern chernozems -- every 3-5 years. The effectiveness of deep cultivation of fallow in behalf of peas, corn, sugar beets, potatoes and perennial grasses has been proven.

The deep cultivation of tracts or fields that are contaminated by suckering weeds (field bindweed, Candian thistle and field sowthistle, prickly lettuce and spurge), in addition to plowing, must include two-stage autumn shallow plowing or loosening of the soil using implements with flat-cutting working organs. On fields containing weeds with deep rhizomes (sedge), post-harvest shallow plowing is less effective. In such cases it is best to use deep plowing with subsequent destruction of the inverted rhizomes using surface cultivations. On fields that are covered with couch grass, deep plowing is carried out following cross cultivation of the soil using disk shallow plows. In the process, it should be borne in mind that late plowing leads not to the destruction but rather to the multiplication of weeds.

Clean fallow is most effective when windbreak strips of sunflowers, hemp or mustard, sown simultaneously with cultivation 35-40 days prior to the sowing of the winter crops, are grown on it.

Success in obtaining guaranteed and high yields of winter crops is dependent to a considerable degree upon the periods for sowing them. Experimental data has revealed that the optimum periods for sowing winter wheat on clean fallow for chernozem soils -- from 20 August to 5 September for sub-zones of chestnut soils -- from 20 August to 10 September depending upon existing weather conditions. Winter rye is sown 5-7 days earlier. Following occupied fallow and non-fallow predecessor arrangements, winter crops are sown at the beginning of the mentioned periods.

Full use is still not being made of the reserves available for raising cropping power through the use of high quality plantings. For example, approximately nine percent of the grain crop areas in the Volga region last year were sown using non-regionalized varieties. Certainly, this is unacceptable. Good varieties produce considerable increases in yields. Thus, during the drought conditions experienced in 1979, on farms in

Pugachevskiy Rayon of Saratovskaya Oblast, the Saratovskaya 46 variety of spring wheat furnished a yield that was 2.8 quintals per hectare higher than the Saratovskaya 38 variety and Krasnokutka 6 surpassed Khar'kovskaya 46 by 1.0 and 1.5 quintals per hectare. In this same rayon, the Tselinnyy 5 barley variety surpassed Donetskiy 4 and Submedikum 199 in terms of cropping power by 3.4 and 4.4 quintals per hectare respectively. Such increases to relatively low absolute yields during dry years are viewed as being rather considerable.

The accelerated changing of strains is obviously being delayed by the seed production service, owing to the slow reproduction of seed for high reproductions. However, even in this area reserves are available for use. In the case of double-row sowing of wheat (60-15 centimeters), following clean fallow and with a sowing norm of 30-60 kilograms per hectare at the Krasnokutsk Plant Breeding Station of the Scientific Research Institute of Agriculture for the Southeast, a higher yield was obtained than that realized from continuous sowing. In the first instance, the coefficient of propagation was 2-3 times higher. Seed propagation is accelerated considerably also under irrigation conditions.

Seed plantings must be tended (high quality agricultural practices) in a very thorough manner. The seed must be harvested and cleaned on a timely and high quality basis. The kolkhozes and sovkhozes should have "experimental fields of agronomists" for the purpose of publicizing new varieties, mastering high quality agricultural practices and accelerating the reproduction of both regionalized and promising varieties.

For overcoming the consequences of droughts, special importance is attached to creating insurance and carry-over seed funds for regionalized varieties.

#### Correct Use of Fertilizers -- An Important Factor for Combating Droughts

One of the principal methods for combating droughts is that of a scientifically sound system for applying fertilizers to the agricultural crops. In addition to raising yields and improving crop quality, the correct use of fertilizers also promotes more economic consumption of water per unit of product and in this manner the crops are provided with resistance against drought conditions. According to data supplied by the Volgograd Experimental Station, mineral fertilizers applied to light chestnut soils during experiments carried out with spring wheat, lowered the intensity of plant transpiration by 60 percent and raised their resistance to desiccation by 30 percent.

Both theory and practical experience underscore the effectiveness of fertilizers in all of the soil-climatic zones in the Volga region and Gornoburgskaya Oblast. Moreover, a high soil moisture content ensures a higher crop return from the use of fertilizers. Notwithstanding periodic droughts, a base fertilizer applied in optimum dosages furnishes an increase in winter crop yields of up to 6.0 quintals per hectare, spring

wheat -- up to 5.0 quintals per hectare, corn for silage -- up to 50 quintals per hectare and sugar beets -- up to 60 quintals per hectare.

The principal condition for high effectiveness in the base fertilizer -- applying it during autumn plowing, in the deep and more damp soil layers. This serves to guarantee that the fertilizer will be effective even during dry years. A study of the effect of various fertilizers on winter crop yields has shown that up to 70 percent of the increase in yield is formed as a result of phosphorus fertilizers, 20 percent -- nitrogen fertilizers and 10 percent -- potassium fertilizers.

The growing of winter crops following occupied fallow raises the requirements for nitrogen and potassium fertilizers. According to data supplied by scientific institutes, in such instances it is best to apply  $N_{60}P_{60}K_{40}$  in forest-steppe regions and  $N_{40}P_{40}K_{40}$  in steppe regions. A mandatory measure in the growing of winter crops is that of applying a nitrogen top dressing; it ensures an increase in yield of from 1.5 to 4.2 quintals per hectare in all zones. Fine results are obtained from a root top dressing applied during the period of spring harrowing of the winter crops. According to information supplied by the Scientific Research Institute of Agriculture for the Southeast, such a top dressing provides an increase of 3.2 - 4.0 quintals per hectare in Saratovskaya Oblast and according to data supplied by the Bashkir Scientific Research Institute of Agriculture -- an increase of 4.5 quintals per hectare in the Bashkir ASSR.

Organic fertilizers serve as an important reserve for raising soil fertility and as a means for combating drought conditions. A considerable portion of the nutrients applied to the soil in the Volga region is delivered in the form of farmyard manure. Moreover, farmyard manure increases the water permeability of the soil by 18-20 percent and it lowers the coefficient of plant transpiration. The effect of farmyard manure (20-30 tons per hectare) in non-irrigated crop rotation plans continues for 4-6 and more years.

Studies have shown that the most effective system of fertilization for standard crop rotation plans in the forest-steppe zone is that of applying 3-4.2 tons of farmyard manure and 3.5-4.5 quintals of standard mineral fertilizer to each hectare of crop rotation plan space. According to data supplied by the Kuybyshev SKhI (Agricultural Institute), an annual application of 4 tons of farmyard manure and 4 quintals of standard mineral fertilizer raised the productivity of a crop rotation plan by 35 percent.

Fertilizers are an important factor with regard to raising the quality of grain. According to data furnished by the Scientific Research Institute of Agriculture for the Southeast, an application of 20 kilograms of nitrogen per hectare (in the form of ammonium nitrate) increased the protein content in the grain by 1.3 percent and crude gluten -- by 2.8 percent. When 40 kilograms of nitrogen were applied per hectare, the protein content increased by 1.9 percent and the gluten content -- by 5.6 percent. At the

same time, a sharp increase took place in the strength of the flour (from 350-400 to 750-800 e.a.). Fertilizers play an especially great role in raising the quality of grain under irrigation conditions.

#### More Efficient Use of Irrigated Areas

The program being followed by our party and state, with regard to expanding the irrigated areas within the zone, requires that the scientists work out those problems concerned with the use of chemical processes on irrigated lands, since the cost of land reclamation work is rather high. An intelligent system of fertilization is the most efficient means for reducing the period of repayment from an irrigated hectare.

The application of fertilizer in a dosage of  $N_{150}P_{90}$  to irrigated land makes it possible to obtain a yield of 27.5 quintals per hectare (25.7 quintals per hectare under control) from Saratovskaya 52 spring wheat and from Kraenodarskaya 39 winter wheat -- 42.5 quintals per hectare (26.4 quintals per hectare under control). Many examples could be cited showing how the use of scientific recommendations in production operations produces high yields from irrigated lands. For example, at the Engel'skiy Sovkhoz in Saratovskaya Oblast and during the dry year of 1977, 36.7 quintals of spring wheat grain and 38.7 quintals of winter wheat grain were obtained per hectare, for the sovkhoz as a whole, from an area of 500 hectares. At the Sovkhoz Imeni Radishchev in Novouzenskiy Rayon, 81.9 quintals of feed units were obtained from each hectare of irrigated land. Some farms are obtaining 600-640 quintals of alfalfa fodder and 500 quintals of corn per hectare.

However, the productivity of the irrigated crops on the whole still remains very low. On the average for 1977-1978, the corn fodder yield amounted to 185 quintals per hectare, annual grass fodder -- 134, hay -- approximately 26 and alfalfa fodder -- 258-320 quintals per hectare. The cropping power of the grain crops in the majority of instances did not exceed 20-25 quintals per hectare. This is extremely low.

One of the principal causes of low productivity on irrigated land is disruptions in the irrigation regime for the agricultural crops. Many farms throughout the zone lack irrigation machines that operate around the clock. The productivity of these machines continues to be low. The second cause is that of failing to attach the proper degree of importance to the use of fertilizers on irrigated lands. For example, the dosages of fertilizer in the Volga region are extremely low -- 4.4 tons per hectare. Adequate amounts of mineral fertilizers are not being applied: 165.2 kilograms of active agent per hectare for grain crops and 133.2 kilograms for forage crops. Moreover, 25 percent of the irrigated land is not being supplied with any mineral fertilizers whatsoever (in Orenburgskaya Oblast, they are being applied to only 62.6 percent of the irrigated land). Thus the productivity of such land is 2.0-2.5 times lower than its potential productivity. In short, the necessary measures must be undertaken to ensure that the productivity of the irrigated lands will be raised a minimum of

twofold throughout the zone during the next few years and that this minimum becomes a program for irrigation farming in the Volga region.

#### Reliable Protection of Crops -- An Important Factor for Farming Stability

The droughts which occur frequently throughout the zone are increasing the role played by plant protection against diseases and pests. Stern climatic conditions weaken the hardiness of plants with regard to damage being sustained and crop losses caused by insects and diseases increase. Thus, special importance is attached here to crop protection measures. One of the principal agrotechnical measures for combating pests and diseases is that of following crop rotation plans. The annual changing of crops on crop rotation fields, accompanied by various soil cultivation methods and schedules, hinders the reproduction of click beetles, corn weevils, grain thrips, grain moths and other harmful insects and plays a large role in preventing sunflower diseases and root rot in cereal grain crops.

Tremendous importance is attached to the seed possessing high sowing qualities, to optimum sowing norms and optimum planting depths and to the use of fertilizers. The protection of crops is promoted by abbreviated harvesting periods. Indeed, a campaign against crop losses not only increases the yield of products, but in fact it also serves as an important link in the system of plant protection.

In individual instances, a need may arise for employing chemical methods for combating pests and diseases. Pesticides possess a high level of effectiveness when employed in a timely manner with the proper technology being observed. For every ruble expended for the chemical treatment of crops, the farms often obtain from 5 to 20 rubles of net profit. A mandatory method is that of chemical disinfection of seed.

In combating pests and diseases, considerable importance is attached to the creation and introduction into production operations of immune varieties of agricultural crops. The zone's plant breeders created wheat varieties having a field resistance against *Puccinia triticina* (Saratovskaya 46, 52, 54, Kinel'skaya 30, Kutulukskaya), smut resistant varieties of millet (Saratovskoye 2 and Saratovskoye 3) and an early ripening variety of the southeastern sunflower in which the heads are not susceptible to rot. In short, a great amount of work has been carried out. The introduction of these varieties into production operations should be accelerated.

#### Feed Production Improvements in All Regions Throughout the Zone

The July (1978) Plenum of the CC CPSU placed greater emphasis upon the task of achieving more rapid development for animal husbandry. And the foundation for such development is a strong feed base. Thus the Plenum of the Central Committee assigned the following task to the rural workers and to the party and agricultural organs and science: to implement radical improvements in feed production and during the next few years to create a

reliable and strong feed base for animal husbandry at each kolkhos, sovkhoz and interenterprise facility. Feed production on the farms must be converted into a specialized branch. The Plenum focused special attention on solving the problem of feed protein, mainly by increasing the production of pulse crops, soybeans, alfalfa, clover, rape and other agricultural crops that are high in protein. The solving of this complicated but nonetheless realistic task requires a great amount of tense effort and a high level of organizational ability and operational efficiency.

The modern level of feed production in the zone by no means satisfies the feed requirements of animal husbandry as it continues to develop, especially during dry years. On the average, the annual feed requirements for the Volga region are being met by only 60-70 percent -- no more than 25-29 quintals of feed units per standard head and during the winter -- 12.6-14.8 quintals instead of 20-25 quintals of feed units. The requirements with regard to feed quality are not being met and, as a result, feed over-expenditures in the Volga region amount to 50 percent. Instead of 1 feed unit, 1.6 units are required in order to obtain 1 kilogram of milk and a kilogram of weight increase in horned-cattle and hogs costs 10-13 and 9-10 feed units respectively. These are considerable amounts and against such feed expenditures it will be impossible to achieve profitability for animal husbandry or increase sharply the production of animal husbandry products in the region.

Scientific research institutes and VUZ's throughout the country and in the Volga region in particular have developed progressive technologies for creating and utilizing cultivated irrigated and non-irrigated haying lands and pastures, which ensure that 4,000-12,000 feed units will be obtained (1,000-2,000 feed units for semi-desert regions). Recommendations were made for highly productive and specialized feed crop rotation plans, for technologies for the multi-cutting utilization of grasses and also for procuring and storing feed which will ensure up to 90-98 percent preservation of the feed. Solutions are presently being obtained for the problems concerned with specialization in the feed production branch.

Studies have established the fact that, for the conditions found in the Volga region, the principal requirements for concentrated feed must be satisfied mainly by means of barley, the cropping power of which is higher than wheat in all oblasts of the zone. In the chernozem and forest-steppe zones, it may be supplemented by oats and on irrigated lands -- by corn and sorghum. Estimates of scientists attached to the Scientific Research Institute of Agriculture for the Southeast reveal that in order to obtain a balance in concentrated feed according to protein content there should be 35 hectares of pulse crops for every 100 hectares of cereal and grain forage crops.

In order to improve the quality of silage, more extensive use must be made of mixtures of sunflowers with peas, vetch and fodder beans, mixtures of corn with Sudan grass and so forth. Special attention should be given to expanding the sorghum plantings in both the pure form and in a mixture with corn.

Of the annual grasses, the most productive under non-irrigation conditions is Sudan grass. In the opinion of scientists, its proportion in the structure of grasses should be raised to 60 percent.

The principal factor in the intensification of feed production in the Volga region, just as in other zones, is beyond any doubt the use of chemical processes. The effectiveness of fertilizers is especially high in the case of irrigated forage crops. For example, 1 kilogram of nitrogen often provides an increase in feed yield that is sufficient for obtaining 1 kilogram of cream butter.

The use of fertilizers in dry valleys also produces fine results. When  $N_{45}-90P_{45}$  was applied in behalf of Sudan grass, the cropping power of the fodder and hay, during experiments carried out by scientific research institutes in the Volga region, increased by 25-35 percent and the protein yield -- by 30-36.5 percent.

Of the perennial grasses, the zone's principal crop is alfalfa and on solonetz soils -- sweetclover. Soil protective crop rotation plans in which grasses occupy a large proportion of a plan can serve as a source for the production of feed using perennial grasses.

Irrigation is becoming a decisive means for raising the intensification of feed production in the arid rayons of the Volga region. It makes it possible to raise the cropping power of all forage crops by 3-4 and more times compared to non-irrigation conditions. In the structure of irrigated areas, the forage crops must occupy 60-65 percent. But full use is not being made of numerous bodies of water for irrigation purposes: rivers, artesian wells and other sources of water.

Of the forage crops, alfalfa is the most productive under irrigation conditions. When a progressive cultivation technology is employed, it furnishes 500-700 quintals of high protein fodder or 120-150 quintals of hay per hectare. The amount of alfalfa raised on regularly irrigated lands must be raised to 40-50 percent of the forage crop plantings.

The experience of research institutes and leading experience have shown that an important condition for the intensive use of irrigated land is the use of post-cutting and post-harvest plantings, which make it possible to obtain up to 20,000 feed units from 1 hectare. The overall area of intermediate crops in the zone can amount to 4-6 million hectares and this will furnish approximately 10-12 million additional tons of feed units.

The most promising post-cutting and post-harvest crops are corn in its pure form and in a mixture with sorghum, soybeans and Sudan grass, sunflowers, peas, sorghum, Sudan grass and vetch-oats mixtures. Catchwork irrigation is deserving of special attention in the southeastern and eastern regions of the steppe zone, since it raises the cropping power of fodder lands by 4-5 times.

Natural haying lands and pastures, of which there are approximately 10 million hectares in the Volga region, still constitute strong reserves. Their productivity is very low. The proportion of feed obtained from haying lands and pastures amounts to only 15-25 percent of the overall production. The carrying out of radical improvements in these lands will raise their productivity by 3-5 times. However, very little has been accomplished in this regard by science or practical experience.

One reserve that has been used very little is that of developing solonetz soils, strongly solonetz soils and the soils of solonetz complexes, all of which occupy an area in excess of 9 million hectares, into mainly fodder lands.

Up until now, intensive growth in the production of feed has been restrained mainly owing to the fact that this branch has been viewed as being of secondary importance. Unfortunately, even now, with the party defining feed production as a leading trend in the conduct of farming operations, by no means has a change taken place in all areas with regard to the attitude towards solving this urgent problem. It is no secret that at the present time neither moral nor material incentives are being issued to the workers for achievements in the field of feed production. This situation must be changed radically. Positive results appear rapidly in those areas where serious attention is being given to the feed problem. For example, at the Yerusalanskoye OPKh [Experimental Model Farm] of the Scientific Research Institute of Agriculture for the Southeast, where the principal task is that of producing grain seed, feed production was reorganized in a radical manner. All forage crops were concentrated in one of four brigades and in one feed crop rotation plan; 32 of the best machine operators (1st and 2d class) were organized into a specialized brigade for the production of feed. Nine communists were assigned to this brigade. The brigade was headed by a specialist possessing a higher education. Here thought was given to the issuing of moral and material stimuli. The position of deputy director for feed production was introduced at the OPKh. As a result, over a period of 2 years the production of feed increased substantially and its quality improved noticeably. Moreover, the feed production expenses decreased sharply and improvements were noted in the productivity of the animals. And this occurred at a time when the annual precipitation was roughly 300 millimeters. This fine initiative, recommended by the institute for the southeast and by the director of the OPKh, Ye.M. Potekhin, must be developed, studied, improved and, certainly, publicized on an extensive scale.

I would like to focus special attention on the need for having all farms in the region, and not just leading farms but absolutely all kolkhozes and sovkhozes, gradually and steadily convert over to the use of industrial systems for producing grain, feed, sunflowers, vegetables, fruit and other types of products. These systems are based upon the use of flow-line technologies, with manual labor being reduced to a minimum or eliminated entirely.

The conversion over to these systems, as borne out by practical experience, is making it possible to solve at least four interrelated tasks. First of all, that of raising labor productivity substantially. As yet, we are still expending several times more labor per unit of output than is the case in certain economically developed countries. Approximately 70 percent of the workers in our agricultural system perform manual labor. The demographic situation and continuing urbanization will in the future aggravate still further our manpower difficulties. Secondly, it will sharply lower output losses during all stages in the production, transportation, storage, processing and sale of goods, the volumes of which are extremely high at the present time. It is sufficient to state, for example, that grain losses from the time it is harvested until it is sold amount to 15 percent, or as much as the country consumes for food purposes. If to this we add the losses caused by weeds, diseases and pests, then this percentage doubles. The losses in forage crops, potatoes, vegetables and fruit are even greater. Thirdly, more complete use must be made of the biological potential of cultivated pastures and their efficiency raised. Fourthly, more efficient use must be made of all other production resources, including the land, water, equipment and fertilizers, since the system must have an optimum structure and, similar to any productive system, be distinguished by expediency.

An industrial branch system in crop husbandry must include all of the technological processes and ensure the availability of the technical means and organizational forms required on a continuous basis for all stages of production, commencing with the breeding of the plants, seed production, soil preparation and sowing and including tending of the crops, harvesting, transportation, storage, initial processing and sale of the products. Everything relating to the kolkhoz-sovkhoz level must be stipulated in the production plans and everything relating to a higher level -- must be reflected both in the special purpose complex programs and in the plans for economic and social development. If this is not done, then everything may remain in the form of nothing more than good intentions. Moreover, the plans must be reinforced by appropriate material-technical resources.

An extremely important role is played by the correct utilization of agricultural equipment. At the present time, a tremendous technical potential has been created at the kolkhozes, sovkhozes and other agricultural enterprises. Over the past 13 years, the value of the machines and equipment has risen from 11.3 to 32.5 billion rubles and this has created the conditions required for reducing work schedules substantially, for improving the quality of work and for lowering labor expenditures. However, only slow improvements are being realized in the mentioned indicators, the losses in machine time are very great and equipment repair and maintenance expenses have increased to an excessive degree.

Great losses are occurring and a reduction in farming stability is taking place owing to technological problems and disruptions in technological discipline, lack of organization in the use of production resources,

especially labor and land resources and, in particular, failure of the farming system to conform to the objective conditions of management. Let us take as an example the harvesting of crops. During harvest operations, the grain losses on the fifth day amount to 3-4 percent, on the tenth -- 17-20 and on the fifteenth day -- 25 percent. But let us remember that the harvesting of grain crops on many farms is being delayed for 20-25 days and more. And it turns out that we sustain colossal losses as a result of just one disorganized harvest operation. This requires that we employ a more intelligent approach for all agricultural operations and ensure that they are carried out during the best periods and in a high quality manner. But this must not be done in the absence of proper mechanization or outstanding work on the part of the machine operators.

#### Improving the Role Played by Science and Agricultural Specialists and Machine Operators in Increasing the Production of Crop Husbandry Products

Modern agriculture has reached a level such that further development is unthinkable in the absence of active utilization of modern scientific achievements. It can be stated that the rapid and mass introduction into agricultural production of scientific and engineering achievements and also leading experience is becoming of decisive importance at the present time. Under these conditions, considerably greater requirements are being imposed upon the scientific institutes.

We must understand very clearly that plant breeding and a sound selection of crops and varieties occupy an important place in the production system for crop husbandry products and in raising the stability and efficiency of farming. Special importance is attached to improving plant breeding work where, in addition to raising productivity, a great amount of attention should be concentrated on such indicators as the resistance of new varieties to unfavorable climatic factors, especially droughts, diseases and pests, improving quality (protein, fat, sugar and so forth), adaptation to individual technologies and, finally, thrifty use of water, nutrients and other resources. When any new variety or hybrid is included in production operations, all of the remaining factors, including nutritional regime, lighting, technology and so forth, should simultaneously be made to conform to the biological requirements of the variety. Moreover, it must be remembered that even a very productive variety or hybrid will produce nothing if appropriate changes are not introduced into the overall farming system or its elements in conformity with these requirements.

The conversion over to the production of seed on an industrial basis, involving the creation of the required material-technical base, must also be accelerated. As yet, these problems are still being solved very slowly in certain rayons in the Volga region and Orenburgskaya Oblast. This situation must be corrected.

But in addition to the creation of highly productive varieties, considerable attention must be given in the studies to those problems concerned with developing methods for the creation of stable and efficient farming,

regardless of existing weather conditions. This is a most important problem and one which must be solved during the next decade. Its solution requires the participation of scientists both in the center as well as in the Volga region and Orenburgskaya Oblast.

It bears mentioning that at the present time a great amount of work is being carried out by the research and educational institutes in connection with furnishing scientific-practical assistance to the kolkhozes and sovkhoses. But we are clearly aware that this assistance is insufficient. Our task consists of further strengthening the link between science and practical work, expanding contacts between the scientists and specialists and also agricultural machine operators and providing the rural workers with scientific knowledge of a progressive technology for production operations in crop and animal husbandry.

I would like to place special emphasis upon activating the role being played by our agricultural specialists, since the importance of this category of workers is exceptionally great at the present time.

An agronomist is an agricultural production technologist, an organizer of farmers and an individual who can work with people and who places a high value on collective experience. In addition to raising the responsibility of agronomists for the fate of farming on the farms, their authority must be strengthened in every possible way. In this regard, an atmosphere must be created in the various areas in which the instructions issued by agronomists relative to production technology matters are viewed as law by those responsible for carrying them out.

In discussing the increasing role being played by specialists, the General Secretary of the CPSU Central Committee, Comrade L.I. Brezhnev, during the March Plenum of the party's Central Committee 15 years ago, stated: "Agronomists and zootechnicians are agricultural production technologists and the role they play is equally as great as the role of engineers in industry. The party views the specialists as a reliable and skilled force for achieving improvements in agriculture. We have confidence in our specialists, trained as they are by the communist party." Such a high evaluation of the work of our agricultural specialists places all of us under an obligation. It is a matter of honor for each of us, each agronomist, to justify this high evaluation by the party and state in the carrying out of our practical work.

Modern agricultural production has for all practical purposes become mechanized in nature. Thus, a culture of farming is naturally being created on each farm by the machine operators. Well aware of this fact, the leading agronomists are devoting special attention to the machine operators, to instilling farming expertise in them and, together with the farm leaders, to displaying constant concern for their life and daily routine. A modern machine operator, in addition to his equipment, must possess a good knowledge of the land on which he works and he must be able

to employ his machines and soil cultivation implements with accurate knowledge of the technology for obtaining a high yield for each crop. This is an indispensable condition for achieving success, especially in areas such as the Volga region and Orenburgskaya Oblast.

Unfortunately, however, constant concern is not being displayed for the machine operators in all areas. As a result, there is a shortage of them in some oblasts. How can there be a culture of farming if there is a shortage of machine operators? In such cases, a priority task of the leaders of farms, rayons and oblasts is that of training the required number of machine operators and providing them with strong agricultural knowledge. The work of training machine operators and providing them with expertise in obtaining high yields must be organized on all of the farms. The agronomists must play a leading role in carrying out this work. A farm agronomist is primarily at fault when a machine operator fails to master the culture of farming.

Today, under conditions involving rapid growth in agricultural production and the continuous technical re-equipping and intensification of such production, an agronomist must constantly look into the future, keep abreast of scientific-technical progress, love the land and utilize it effectively and serve in the capacity of leader of the machine operators and rural workers in the campaign to raise the culture of farming and the cropping power of the fields. At the same time, an agronomist must be a skilled economist in his field and find and place in operation new production reserves that will promote a reduction in production costs, improve output quality and raise the labor productivity and profitability of the crop husbandry branch.

An agronomist has many concerns. He is an extremely busy individual. But quite often his production functions are hindered by so-called paper work, the majority of which he should have been released from long ago. However, there is some paper work which an agronomist must complete. This includes first of all the field history book, in which are reflected all of the agronomic measures aimed at raising the culture of farming, accumulating, retaining and utilizing moisture properly and achieving high and stable yields. If a farm lacks a field history book, there can be no orderly system for handling the land, there is no agronomic spirit or memory and in fact there is no agronomist. The field history book should serve as a handbook for each agronomist. It reveals the growth in his expertise and each year it forces him to reflect upon his work, improve his agricultural practices on each field and objectively take into account the prevailing weather conditions. It must be accompanied by topographic plans for the fields, soil maps and agrochemical cartograms.

In addition, each agronomist must have a developed plan of measures for raising the culture of farming and increasing the production of grain and other crop husbandry products for each year; this plan should call for three types of agrotechnical work: for optimum weather conditions, for

weather conditions considered normal for a given area and for dry years. The machine operators must be familiar with this plan.

It is important for the program of measures developed on a farm to be the result of creativity on the part of all of the field crop husbandry workers; each machine operator must possess an accurate knowledge of his place in this plan, the work he must perform and how he is to do it. Only when this is the case will success be ensured.

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## REGIONAL DEVELOPMENT

### REPORT ON SEMINAR ON FLOUR MILLING, GROATS, MIXED FEED INDUSTRY

Moscow MUKOMOL'NO-ELEVATORNAYA I KOMBIKORNOVAYA PROMYSHLENNOST' in Russian No 5, May 80 p 25

[Article reporting on a seminar-conference of workers in the flour milling, groats and mixed feed industry in Alma-Ata]

[Text] A seminar-conference of workers in the flour milling, groats and mixed feed industry of Kazakhstan was held in Alma-Ata.

Participating in the seminar were the management workers and specialists of enterprises, of administrations of grain products, of the ministries of procurement and agriculture of the Kazakh SSR and workers of scientific and planning institutes.

The meeting was opened by M. D. Dairov, Minister of Procurement of the Kazakh SSR.

I. S. Aleikin, Deputy Minister of Procurement of the Kazakh SSR spoke about the results of work of flour milling, groats and mixed feed industry in the republic in 1979.

The flour milling, groats and mixed feed industry of Kazakhstan is securing the constant growth of production volume in quality meal, especially meal of good varieties, groats, mixed feed, protein-vitamin additives and carbamide concentrates. During 4 years of the 10th Five-Year Plan the production of quality meal increased by 5.6 percent, including meal of the highest quality--by 96.7 percent, mixed fodder--by 32.4 percent and BVD [protein-vitamin supplements]--by 84.1 percent. The production of a new type of product--carbamide concentrates-- has been assimilated. In 1979 alone the growth of production of mixed fodder in the republic comprised 135,000 tons, or 6.1 percent; of BVD--24,700 tons or 23.0 percent. In 1979 35,700 tons of carbamide concentrates, over 1.6 million tons of quality meal and 326,300 tons of groats have been produced. However, there are shortcomings in the work of grain-processing enterprises in the republic. This was the reason for the non-fulfillment of plans for the production of meal, groats and mixed feed in some enterprises.

The participants in the conference heard the speeches of specialists and administrative workers in the Ministry of Procurement of the Kazakh SSR. Ye. V. Berestnev, director of the Flour Milling-Groats Industry, spoke about ways to increase production and improve the quality of meat and groats in Kazakhstan. Z. Zh. Syikov, director of the Administration of the Mixed Feed Industry, spoke about ways to increase the production and quality of mixed feeds, BVD and carbamide concentrates. A. B. Nuralikhanov, deputy director of the Administration of the Elevator Industry, discussed measures to improve the quality of raw materials supplied for industrial processing. Yu. S. Onishchuk, director of the Transportation Administration, talked about raising the effectiveness of utilizing railroad transportation in industrial enterprises.

Professor L. A. Trisvyatskiy, director of VNIIZ [All-Union Scientific Research Institute of Grain and Grain Products], meritorious scientific worker of the RSFSR, presented an interesting speech on problems existing for the flour milling and groats industry in this country and abroad.

Also speaking at the conference were the director of the technical administration V. B. Sosnovskiy, the director of the planning-economic administration Ye. N. Shurinova (Ministry of Procurement of the Kazakh SSR), the director of the Kazakh affiliate of VNIKP [All-Union Scientific Research Institute of the Canning Industry] K. I. Uralov, directors, senior engineers, directors of production-technical laboratories and production leaders.

The participants of the seminar-conference exchanged work experience, made a number of proposals directed at increasing the production of meal, groats and mixed fodder, at improving production technology and raising the quality of products and made recommendations on the continued improvement of production effectiveness.

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## TILLING AND CROPPING TECHNOLOGY

### INCREASE IN MILLET PRODUCTION URGED IN KAZAKHSTAN

Alma-Ata SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 4, Apr 80 pp 27-28

[Article by L. Mozhayev, deputy chief of the Main Agricultural Administration of the Kazakh SSR Ministry of Agriculture: "Increasing Millet Production"]

[Text] Millet, a valuable grain crop, has national economic importance and great food and industrial value, and the straw, chaff and byproducts from processing it have nutritive properties. This large crop occupies a considerable proportion of the republic's grain production. In recent years it has been planted on 7,000-8,000 hectares. This is mainly in Aktyubinskaya, Kustanayskaya, Pavlodarskaya, Semipalatinskaya, Turgayskaya, Ural'skaya and Tselinogradskaya oblasts. Last year, with an area of 838,600 hectares in the republic as a whole, 6.1 quintals of grain were obtained from each of them. With a gross yield of 512,000 hectares, the farmers sold the state 302,000 tons. But the plan was fulfilled by only 73 percent.

It should be noted that the most valuable biological feature of millet is its drought resistance.

Although the main regions where this crop is cultivated are located in the most arid zone, production practice shows that individual farms, by applying advanced technology that is recommended by science for the cultivation of this crop, utilize existing reserves and achieve good yields of grain.

Thus on the Severnyy Sovkhoz in Komsomol'skiy Rayon in Aktyubinskaya Oblast, in certain years they have harvested 13 quintals from each 400,000 hectares, and on individual sections--25-28 quintals. In 1976 on the Kolkhoz imeni Shevchenko in Martukskiy Rayon, they received 14.2 quintals from each of 283 hectares; on the Yaysanskiy Kolkhoz in the same rayon they received 12.1 quintals from each of 745 hectares; and on the 40 Let Kazakhskaya SSR Sovkhoz, they obtain 11.4 quintals from each of 460 hectares.

Good results were achieved last year by millet growers of Pavlodarskaya Oblast who raised a large yield, which made it possible for them to overfulfill the plan for the delivery of grain by 200 percent.

Certain sections produce even larger yields of grain. For example, in Aktyubinskaya Oblast, the team headed by the machine operator Kusatayev, of the Kolkhoz imeni Il'ich on Algin'skiy Rayon, on an area of 350 hectares raised and harvested 15.6 quintals per hectare. On the Pobeda Solkhoz in Oktyabr'skiy Rayon the team of Zhakupov obtained 16.8 quintals per hectare.

There are no special "secrets" in their work. The main thing is high agrotechnology for the cultivation of the crop. Millet is responsive to fertilizers, especially on land with good moisture retention. A considerable effect is produced by the application of small doses of super phosphate in the rows. This increases productivity by 3-4 quintals per hectare.

Predecessors play an important role. It is known that millet does well when planted on fresh land--in the furrow or in the furrow/inversion of virgin land, long-fallow land or after perennial grasses. It is not without reason that millet has been described as a "furrow crop." But this in no way excludes the possibility of cultivating it on old plowed land. It grows well after fertilized row crops, pulse crops and fertilized spring or winter wheat that is planted on clean fallow. Planting it on fertilized clean fallow is also quite justifiable. In regions where winter grains are cultivated millet is an excellent crop for replanting areas that have died out, fulfilling the role of a kind "insurance crop." This is possible because of the relatively short growing period and the late planting times.

But practice has confirmed that one should avoid planting millet after millet: the areas become very weedy and the plants are subjected to millet midge. This crop does not do well on solonchaks, rapidly packing, shifting or heavy soils.

The entire system of agrotechnical measures applied for cultivating millet should include, first of all, maximum elimination of weeds, to which it is much more sensitive than other crops.

Spring cultivation must be started when the soil has warmed to 10-12 degrees at the depth of planting of the seeds and there is no danger that the shoots will be harmed by late frosts. It is necessary to conduct the work with maximum moisture retention and to try not to plant the seeds in dry land. Maintaining the necessary depth of planting (5-6 centimeters) and placing the seeds in a moist layer makes it possible to use SZS-2.1 seeders.

The planting is done mainly by the continuous row method. The wide-grasp and belt method with summer interrow cultivation has not become widespread in practice. The fields are rolled after planting with a set of ring rollers.

Practice shows that without the application of herbicides one does not receive a good yield of millet on fields where barley and wheat grow fairly well. But treatment with herbicides makes it possible to facilitate the fight against weeds and produces a good effect.

The lack of uniformity in the ripening of millet makes harvesting more difficult. Reaping is started when the seeds in the upper part of the tassel reach full ripeness and those in the middle part reach waxy ripeness. A typical sign of this condition in the majority of strains is when the upper third of the tassels become brown. Millet sheds severely. Therefore to wait for complete ripeness of the tassels means to lose a large part of the yield. It is harvested individually. This provides for obtaining relatively clean and dry grain and facilitates its further processing and storage.

The main strain of millet which we cultivate in the republic is Saratovskoye 853. Last year this strain occupied 82 percent of all the planted areas. Its main agrobiological peculiarities include a medium ripening time, a uniform ripening and great resilience. The growing period from the appearance of shoots until ripening is 80-85 days. It has good drought resistance, but also reacts well to moisture. It is resistant to lodging, shedding, damage by pests and infection by diseases. It has been regionalized in all the main millet growing oblasts of the republic. The Volzhskoye 3 and Saratovskoye 2 have become widespread.

In Aktyubinskaya Oblast as early as 1938 the old local strain, Uilskoye Beloye Mestnoye, was regionalized. It has a compressed, slightly drooping, medium dense, short (18-23 centimeters), dirty yellow tassel with cream colored, white and light yellow grain. It grows high, has poor drought resistance and ripens late, but it is fairly resistant to lodging. Therefore it is well adapted to cultivation on irrigated land. In our opinion, this strain has been undeservedly forgotten and it is no wonder that in recent years measures have been taken to restore it. Incidentally, the farms of the oblast have 500 quintals of seeds of Uilskoye Beloye Mestnoye for planting this spring.

This year the farms of the republic must sell the state no less than 420,000 tons of millet. In order to cope with this task successfully, it is intended to plant this crop on 813 hectares and to obtain a gross yield of 615,000 tons with a productivity of 7.6 quintals per hectare.

In order to fulfill the assignment, in the autumn the sovkhoses and kolkhozes stored up all the necessary seeds and brought them up to planting conditions, they prepared the necessary technical equipment for the work, and they carried out snow retention measures on the fields.

Since the productivity of millet, like other grain crops, depends largely on the seeds, one should check on their quality again and again and take all necessary measures to make sure they are of the highest reproductions. Unfortunately, as the inspection showed, on a number of farms there are essential shortcomings in the preparation of millet for planting. And they must be eliminated immediately. We must not allow last year's mistakes, when only about half of the seeds planted on the sovkhoses and kolkhozes were of the first or second class.

In order to fight against smut diseases, it is necessary to treat the seeds, which is also underestimated in a number of cases. Granosan, merkusan and TMTD are used against loose smut. But the best preparation is considered to be formulan mixed with water in a ratio of 1-80 and applied with a norm of expenditure of effective solution of 13 liters per ton of seeds. Grain treated this way if left in the solution for four hours. The treating with formulan is done 2-4 days before planting.

The agrochemical service on each farm must decide on the most efficient distribution of the areas planted in millet, and assign the best predecessors for it and also land that has been cultivated in the autumn. Planting after spring plowing, as a rule, produces smaller yields than when the land is plowed in the fall since with spring cultivation the moisture supply in the soil is not as good and the weediness is greater. It is necessary to be concerned about observing all agrotechnical requirements of this crop. Careful preplanting cultivation in order to destroy weeds is especially important. But at the same time one should not allow overdrying of the soil or unproductive losses of moisture. These tasks are carried out best with soil cultivation machines of the subsoil type.

Special attention should be devoted to correct utilization of fertilizers. Practice has shown that when there is general shortage of phosphorus fertilizers it is most effective to apply them in the rows when the millet is planted.

A complex of measures should be conducted to fight against weeds. Chemical weeding is very important and it is necessary to prepare well for it--providing spare parts and herbicides, and repairing surface equipment for sprinkling. The treatment should be carried out selectively; the use of aircraft for this is not expedient.

The production experience of many farms shows that good results are achieved in millet growing, as a rule, in places where specialized teams handle the cultivation of the crop, people who are working continuously from year to year in a purposeful way to increase productivity. Therefore it is very important now to take measures for staffing existing millet raising teams and creating new ones, and providing them with the necessary selection of machines, equipment and other material means.

To increase the production and sale to the state of this valuable groat grain is an important task for millet growers of the republic in the final year of the Tenth Five-Year Plan.

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## TILLING AND CROPPING TECHNOLOGY

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### ATTENTION DRAWN TO IMPORTANCE OF BEAN CROPS

Moscow MUKOMOL'NO-ELEVATORNAYA I KOMBIKORMOVAYA PROMYSHLENNOST' in Russian No 5, May 80 p 13

[Article by D. Tenyayev, state inspector of the USSR Ministry of Procurements: "More Attention to Beans"]

[Text] The most valuable pulse crop is beans, whose seeds contain an average of up to 27 percent protein. Numerous various dishes are prepared from beans and they are extensively used in the canning industry.

In order to stimulate the production of beans, procurement prices for them have been increased to 300-400 rubles for one ton, depending on the strain and the basic condition. But areas planted in them have been sharply reduced and the gross yields have decreased. As a result, the demand for beans among the population has not been satisfied for a number of years. The difficulties with producing beans consist in that up to this time state procurement prices for this crop have not been planned under a centralized policy and their local production is considered to be not mandatory, but secondary.

There are many regions in our country that are favorable for cultivating beans. They include Georgia, Moldavia, the Northern Caucasus and Central Asia. By applying advanced agrotechnology for their cultivation, many farms obtain good and stable yields of beans. Thus the Kolkhoz imeni Kalinin in Bolgradskiy Rayon in Odesskaya Oblast last year planted beans on an area of 100 hectares, harvested 21.5 quintals per hectare and obtained 215 tons of beans. With an assignment for the sale of 70 tons to the state, the kolkhoz sold 73 tons, or 104 percent. As a result of the reduction of the production cost of beans, the kolkhoz obtained 4,943 rubles in profit.

The Kviavi Kolkhoz in Goriyskiy Rayon in the Goergian SSR planted beans on an area of 10 hectares and obtained a productivity of 41.5 quintals. The Pobeda Kolkhoz in Kotovskiy Rayon in the Moldavian SSR has obtained good results in cultivating beans.

One can give many examples of obtaining large yields of beans in various regions of the country. In places where the workers have been convinced from practice of the economic advantage of producing this crop and where they apply a complex of agrotechnical measures, they obtain good yields and large amounts of profit.

In order to further stimulate the production of beans, to increase their productivity and to improve their quality, the USSR Ministry of Agriculture and the USSR Ministry of Procurements in 1979-1980 approved the following valuable strains of beans: Belsemyannaya Prenzenskaya, Dneprovskaya Bomba, Krasnogradskaya 244, Dneprovskaya 8, Kishinevskaya Shtambovaya 1 and Khar'kovskaya 4. Beans of the most valuable strains are paid for at a price that is 10 percent higher than that established for regular beans.

When they arrive at the grain receiving enterprises the beans of the aforementioned strains must have normal color and odor and must meet certain minimum conditions. The strain of bean must be indicated in the accompanying document that is based on the registration or approval documents.

Beans that come into the grain receiving enterprises must be placed in grain storehouses that are equipped with installations for active ventilation and their quality must be carefully checked. Seed beans should be stored in packaged form and sorted according to strains and reproduction.

State procurement inspectors of the various rayons where beans are produced and procured should exert maximum efforts in order to increase the production and procurement of beans, and workers of grain receiving enterprises must provide for continuous receipt and storage of this valuable crop.

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## TILLING AND CROPPING TECHNOLOGY

### USE OF AVIATION TO AID IN FIELD WORK

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 15 Apr 80 p 2

[Article by B. Panyukov, deputy minister of civil aviation of the USSR:  
"Harvesting Work From the Air"]

[Text] Spring is an intense time not only for farmers. The pilots of agricultural aviation participate with them in the harvest. This year alone they must cultivate no fewer than 91 million hectares of fields from the air. One-third of the total work volume regarding the application of chemicals will be performed with the aid of airplanes and helicopters. Agricultural aviation has taken on the tasks of performing labor-consuming operations such as early-spring and non-radical top dressing of grains, defoliation and dessication of plants, treatment of rice and other crops. In other words, there is enough work to keep us busy until late fall. What determines its success?

First of all, people do. Never before has agricultural aviation in this country had such experienced and skilled cadres at its disposal. The contribution of our aviators was especially great last year during a difficult fight for the harvest. The homeland evaluated their efforts highly. We were very happy at the news that the commanders of the AN-2 planes M. Gurzhiy from Odesskoye and G. Tskhovrebov of the Samarkandskoy aviation enterprise received the State Prize of the USSR for 1979 as leaders in all-union socialist competition.

G. Tskhovrebov as well as the commander of a flight division I. Girin and aviation technologist K. Zhapabayev of the Kazakh Administration of Civil Aviation were given the title of Heroes of Socialist Labor. A large group of young aviators was given awards by the Komsomol Central Committee, the MGA [Ministry of Civil Aviation] board and the presidium of the central committee of the trade union of aviation workers.

Many workers in agricultural aviation have fulfilled the goals of the 10th Five-Year Plan ahead of schedule and are now working for 1981. Among them are the crews of V. Zabolotnyy, A. Khomenko, A. Babanin of the Kazakh Administration of Civil Aviation, of V. Ryazantsev and V. Smirnykh of the

Northern Kazakh UGA [Administration of state aviation], V. Tabachnyy from the Ukraine and others.

The crew of the AN-2 airplane from the second Krasnodarskoye Aviation Enterprise headed by V. Galyuk this year applied fertilizer on over 13,600 hectares, having fulfilled the norm by more than double. Helicopter commander S. Zhurba of the same aviation enterprise also achieved great success. He has already fertilized 5,160 hectares of fields.

It should be noted that their success is due to a stable technical and organizational base. For example, the building of landing strips in enterprises and the close ties with agricultural chemization points that were established according to the decisions of the July 1978 Plenum of the CPSU Central Committee enable us to decrease labor expenditures by a factor of 1.5 and to almost double the output of airplanes.

This year has its own special features. Progressive methods of cultivating fields and new flight regiments will be utilized more extensively. The agricultural attachments for airplanes and helicopters will be improved. Small-volume and ultra-volume spraying will become more widespread in combatting weeds, pests and plant diseases, as will other progressive methods.

With each day the spring harvest work of aviators is becoming more widespread. In the Ukraine alone by early April about 1.5 million hectares of fields were treated, including 700,000 hectares in the central chernozem strip of Russia and in the Non-Chernozem Zone. According to tradition, they were aided by pilots from the Kazakh UGA. At the same time preparations are being made for the beginning of aviation-chemical work in Kazakhstan. Landing strips are being repaired and the necessary agricultural equipment is being readied. Now our main goal, like that of farmers, is to maximally utilize every hour, not to tolerate idle technology and to fulfill all operations with quality. In this we are counting on the business-like support of komsomol organizations in enterprises, of planners and of komsomol raykoms and obkoms.

In early April the representatives of the best youth crews in the country gathered in Krasnoyarsk for the fifth all-union gathering of komsomol youth of Aeroflot collectives, victors in the socialist competition in honor of the 110th anniversary of V. I. Lenin's birth. They exchanged progressive experiences and took a trip to the Lenin Museum-Preserve in Shushenskiy. There is no doubt that young aviators will reach higher goals and will successfully deal with the assignments of the final year of the five-year plan.

Pilots know the term "altitude ceiling." In agricultural aviation it is usually small. But the genuine heights of our labor will be determined by the harvest we raise in the country's fields. The winged helpers of farmers are working for this now, selflessly and with great effort.

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## TILLING AND CROPPING TECHNOLOGY

### USE OF AVIATION AUGMENTS FIELD WORK PROGRESS

Moscow LENINSKOYE ZNAMYA in Russian 4 Apr 80 p 1

[Article by I. Abakumov: "Preserving Every Hour"]

[Text] Spring is late, and this means the schedule of field work will be compressed to the limits and it will be more intensive than planned. The degree of readiness of enterprises and various services to move into the fields is now of decisive significance.

Here is what our correspondent was told.

The director of the oblast association Mossel'khokhimiya [Moscow agricultural enterprise chemical association] N. S. Mukhin:

"The workers of the association have fervently supported the initiative of village workers of Leninskiy Rayon, 'The largest production output per hectare.' This is not accidental. The fate of the harvest depends greatly on agrochemists. We are trying to supply the oblast's sovkhozes and kolkhozes with mineral fertilizers.

"A recent resolution of the CPSU Central Committee and USSR Council of Ministers, 'On Supplementary Measures to Increase the Production of Coarse and Succulent Feeds in 1980 and on Raising their Quality,' places a great responsibility on us, agrochemists, to complete the top-dressing of grasses and winter crops on schedule.

"All of our subdivisions are adequately prepared for spring. The plans have been overfulfilled in areas such as liming soil. Fields have been supplied with 250,000 tons more organic fertilizer than last year. Technology has been completely repaired and machine operators are waiting for a signal to go into the fields. Sixty-six mechanized land detachments will aid enterprises in rapidly top-dressing crops with mineral fertilizers.

"In addition to ground mechanized detachments agricultural aviation will be used extensively for spring top-dressing. We have created an operations group which controls the work of aviation. A schedule has been worked out for airplanes and helicopters according to various rayons."

A. I. Pyatkin, director of the department for the utilization of aviation of the Myachkovskoye Aviation Enterprise says:

"This spring we must treat 500,000 hectares in the Moscow region. Of these, 255,000 hectares are in winter crops and the rest are in perennial grasses. In 36 rayons of the oblast 48 AN-2 airplanes and 43 MI-2 helicopters with agricultural adaptations will be in operation. All of them are equipped with flying and technical elements.

"This season we prepared carefully for double shift operations, having equipped many machines with relief crews. This will enable us to continue the spreading of mineral fertilizers throughout all daylight hours.

"All radio facilities have also been shipped to the place of work. The oblast's enterprises and Mossel'khozkhimiya [Moscow agricultural chemical association] have selected and prepared airplane loaders and tank trucks for work.

"I would like to make a request of enterprise administrators not to try to 'economize' on signalmen, who show pilots the boundaries of fields from the ground. Without signalmen our work is made more difficult and it happens that fertilizers do not meet their mark. As soon as weather conditions permit, we will immediately distribute all technology among the rayons."

As we see from the above comments the readiness of agrochemists and aviators is sufficiently high to complete an on-schedule and quality top-dressing operation and to utilize every single available hour during the first spring work. This is satisfying.

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## TILLING AND CROPPING TECHNOLOGY

### BELORUSSIAN FARMS ENVISION CHANGES, IMPROVEMENTS IN FIELD CROPS

Minsk SEL'SKAYA GAZETA in Russian 5 Jun 80 p 2

[Article by V. Yefremenko, head of the division of intensification, Belorussian SSR Scientific Research Institute of the Economics and Organization of Agriculture, candidate of economic sciences: "Confirmed in Practice"]

[Text] Experience shows convincingly that even in bad years the drop in yield from grain crops at farms with the most fertile and level soils is only half of the average. This is confirmed by long-term data from experimental stations, state varietal testing plots, and leading farms in the republic. The soils at the Ust'ye experimental station in Orshanskiy Rayon, for example, are almost neutral in pH today and have a soil-improvement factor of 0.97. The yield of grain crops at the farm has shown a steady rise, reaching 40.6 quintals per hectare in 1978. There are 263 kolkhozes and sovkhoses in the republic with approximately the same soil characteristics; they receive 30-35 quintals of grain per hectare, although their yield drops in bad years.

Therefore, to receive stable grain yields we must work to establish a good soil setting. Scientific studies show and progressive know-how confirms that doses of organic fertilizer should be increased from the current 13.7 tons per hectare of arable land to 20, while the doses of mineral fertilizers should be increased from 263 to 300 kilograms of active substance and the dose of lime to seven tons per hectare. One-third of the organic fertilizer and 70-80 percent of the phosphorus-potassium fertilizer should be applied during fall plowing.

But this is just one side of the matter. A survey of many fields in different oblasts of the republic showed that differences in their fertility in one sector or field cause variations in grain yield from 8-10 to 40-50 quintals per hectare. This differentiation changes little as the general soil fertility rises because the doses of fertilizer applied remain the same. In part this can be explained by the lack

of machinery and equipment for differentiated application. But with an agrochemical soil description of the sector or field in hand, it is possible to accomplish this under production conditions by using local application. Increased doses, up to 120 tons of organic and four quintals of mineral fertilizer per hectare, should be applied to less fertile sectors. At the present time this is one of the most important steps to even out soil fertility. It makes it possible to increase the average yield of grain crops by 50 percent and get stable yields of 35-40 quintals per hectare every year.

The practice of raising inter-row crops helps accumulate humus and nutrients in the soil from their stubble remains. This should be considered the second most important factor in raising the productivity of our soils, which is confirmed by the experience of the Kolkhoz imeni A. M. Voronetskiy in Berestovitskiy Rayon, the Sovkhoz imeni 60-Letiya Kompartii Belorussii in Berezovskiy Rayon, the Rachkovichi, Slutskiy, and imeni Uritskiy sovkhoses in Gomel'skiy Rayon, and other farms where such plantings occupy 15-30 percent of the arable land and produce 36-52 quintals of feed units per standard head of livestock. Most of the kolkhozes and sovkhoses of the republic can introduce this practice. Therefore, they should revise the structure of their crop rotations with this in mind, buy the seed, and allocate at least one-quarter of the arable land for intermediate crops.

Specialists and managers at the farms and agricultural agencies must also look into substantiating the forgotten reserve of introducing silage corn and feed sugar beets into the crop rotations in all the rayons of the republic. The long-term experience of farms in Grodnenskiy Rayon shows that the 3,000-kilogram per cow milk barrier can be passed if the structure of plantings includes at least 3.5 percent silage corn and 1.5-2 percent feed sugar beets for livestock. Furthermore, using increased doses of nitrogen fertilizer for the corn and sugar beets, which any farm can now do, and triple treatment of fields with chemicals for weed, pest, and disease control guarantees high, stable yields. The success of this practice is well demonstrated by the experience of the kolkhozes and sovkhoses of Ostrovetskiy Rayon.

Another example of this is the Dribinskiy Sovkhoz in Goretskiy Rayon. They have developed grass plantings combined with cornfields there; this has had a beneficial effect not only by raising soil fertility, but in strengthening the feed base, efficient management of animal husbandry, and obtaining large profits. The sovkhos sharply improved the fertility of its formerly impoverished lands by rational use of organic and mineral fertilizer and lime. Last year the farm sold the state 10,000 quintals of meat, 30,000 quintals of milk, and made more than 1.6 million rubles of profit.

We also have an opportunity to increase the efficiency of reclaimed lands. One hectare of this land is already 1.3-1.5 times more productive

than unreclaimed land. It can be made even better by establishing large fields which permit the use of highly productive machinery. Available data illustrate that establishing large rectangular reclaimed fields and eliminating minidepressions and dips in them raises grain yield by 12-20 percent, mainly by reducing disease and affliction by snow mold, fungus diseases, and root rot.

It is extremely important to change the present ideas on the assortment of grain crops raised at each farm. A large number, 8-10, of different crops and breaking the land up into many small fields with lengthy rotation plans leads to loss of grain harvest and overexpenditure of capital. Given the policy of advancing specialization we must move decisively toward adoption of uniform farm-wide short-rotation (5-7 fields) systems involving 3-4 different grain crops. In this case the specialized commodity crop (flax, sugar beets, potatoes, and vegetables) must be allocated 14-15 percent of the planted area. Implementation of these steps will, of course, require a **partial** revision of the specialization of the kolkhozes and sovkhoses and the crop rotation types and plans they have adopted and concentration of certain grain and other crops at farms that belong to interfarm associations.

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## TILLING AND CROPPING TECHNOLOGY

### SPRING ARRIVES, FERTILIZER MISMANAGEMENT CRITICIZED

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 30 Apr 80 pp 1-2

[Article by V. Girgor'yev, secretary of the Central Committee of the All-Union Komsomol]

[Excerpts] Spring has asserted its vitality throughout the country. Over a considerable area, however, its caprice is making itself felt: warm days are followed by cold ones, clear weather alternates with wet, windy weather, and destructive frosts ravage the soil. Nonetheless, as each 10-day period passes the sun shines down more bounteously on our fields and meadows, our birch groves and oaks, giving them renewed strength.

Rural workers receive spring with a special sense of responsibility, a heightened sense of duty. Now they must care for the winter crops and plant the spring grains, put in vegetables and prepare the soil for late row crops, and take care of the orchards and meadows. The farmers know that doing spring field jobs at the scientifically recommended times, the time confirmed by progressive experience, is a large step toward meeting the challenges that face agriculture today.

All the same, experience shows that many kolkhozes and sovkhoses in some places permit large losses and spoilage of fertilizer, violate procedures for its application, and get a poor return from it. In Voronezhskaya, Permskaya, and various other oblasts one-third of the available mineral fertilizer was kept in open areas and one-sixth was spoiled. Some farms in Gor'kovskaya and Tambovskaya oblasts still have not straightened out their records of receipt and application of mineral fertilizer. Fertilizer is applied not by actual weight but rather by the weight shown on the Sel'khozkhimiya invoices. As a result fertilizer is written off as applied to farm crops without taking account of losses in storage and hauling, thus covering up instances of mismanagement in fertilizer storage.

According to data from the scientific research institutes, use of one ton of manure gives a gain of 0.7-1.1 quintals of grain. But each year 100 million tons of organic fertilizer is not used, which means that a significant amount of crop output is lost. The farmers in Astrakhanskaya and Irkutskaya oblasti and Khabarovskiy Kray have applied less manure to their fields this year than last.

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## TILLING AND CROPPING TECHNOLOGY

### CHEL'YABINSKAYA OBLAST CHERNOZEM SOIL STRUCTURE DISCUSSED

Sverdlovsk URAL'SKIYE NIVY in Russian No 12, Dec 79 pp 22-23

[Article by V Shumov, senior scientific work of the Chelyabinsk land-improvement station; M. Abayev, engineer of the Yuzhuralgiprovodkhoz Institute: "Structure of Chernozem Soils in the Trans-Ural Steppes"]

[Text] During the period of development of virgin and unused lands in the steppe regions of Chelyabinskaya Oblast, more than 600,000 hectares were brought under the plow. Almost two thirds of these lands were of the best soils--chernozem. During the first years farms harvested 3-5 quintals per hectare more wheat from these newly developed chernozem soils than from lands that had been under cultivation for 20 years. Later, as a result of a low standard of agrotechnology, the fertility of these newly cultivated chernozem lands declined and the yield of grain crops decreased.

Guaranteed yields from unirrigated chernozem lands of the steppe zone of Chelyabinskaya Oblast can only be ensured on the basis of study of their agrophysical properties, among which soil structure is of primary importance. Most scientists consider structure to be the main factor in soil fertility, inasmuch as structure of the soil governs its water, air and nutrient levels.

Leached, ordinary and southern chernozem soils of medium and heavy texture predominate in the Trans Ural steppe of Chelyabinskaya Oblast. Light-textured chernozem soils are found primarily in the Troitsiy, Verkhneural'skiy and Varnenskiy regions.

Over more than 20 years of cultivation of the chernozem soils the topsoil layer lost to wind erosion from 4 to 26.6 percent of the particles of less than .001 millimeters in size, as compared to the level of such particles in virgin soils. The greatest losses are seen in light-loam and sandy-loam chernozem soils (12.5-24.6 percent) and in southern alkaline chernozem soils (26.6 percent). The southern chernozem soils are widespread in the Kartalinskiy and, particularly, the Bredinskiy regions.

Virgin chernozem soils, as is known, have a high potential fertility and a most pronounced water-retaining structure. As these lands are plowed the natural soil-forming process is disrupted. The number of soil microorganisms, primarily nitrifiers and bacteria, in the cultivated layer rises sharply. Mineralization of the humus increases, which leads to a decline in absorptive capacity and a reduction in humus and nitrogen content. In the chernozem soils under long-term cultivation (20 years) the loss of humus amounted to 13 percent and the loss of converted calcium was 10-15 percent, as compared to the composition of virgin soils.

We have established that long-term cultivation with a low standard of agrotechnology harms the structure of chernozem soils in the Trans-Ural steppes and thereby lowers their fertility.

Before development of the virgin lands the leached, ordinary and southern alkaline chernozem soils of a heavy-loam composition had 82.1, 68.8 and 54.8 percent respectively of water-retaining aggregates larger than .25 millimeter in its surface layer (0-10 cm). After 20 years of cultivation these percentages were reduced to 35.8, 35.1 and 29.1.

The most intensive disaggregation of the water-retaining structure occurs in soil aggregates larger than 1 millimeter. Whereas before cultivation the leached, ordinary and southern alkaline chernozem soils contained 49.1, 42.9 and 31.8 percent of such aggregates in their surface layer, after 20 years of cultivation they were 14.4, 5.2 and 4.7 percent.

In the first 15 years from the time the virgin lands of the Trans-Ural steppe were first cultivated the process of disaggregation of the most valuable aggregates, larger than 1 millimeter, continues at an intensive pace in the topsoil layer, where favorable conditions for vital activity of soil microflora are created. In the subsoil layers, which have not been subjected to cultivation, loss of humus substances, changes in the converted bases and disaggregation of water-retaining macroaggregates larger than 1 millimeter were low in the first 15 years of cultivation. Leached chernozem soils in virgin condition have 24.8 percent of water-retaining aggregates of 1-.25 millimeters in the 20-30 centimeter layer. After 10 years of cultivation their quantity reach 35 percent. In the soils under long-term cultivation (20 years) these aggregates accounted for 46.4 percent of the total aggregates, i.e., as compared to virgin soils, the content of these aggregates in the latter case rose to 187 percent.

In the steppe regions of Chelyabinskaya Oblast almost two thirds of all cultivated chernozem lands were first plowed 20-25 years ago and now need improvement of their fertility, to include their primary factor-- soil structure.

We have studied the role of perennial grasses (a mixture of lucerne and unawned brom grass) in building up the structure of unirrigated long-cultivated chernozem soils.

Depending on the specialization of the farms, perennial grasses cover 4 to 12 percent of the cultivated land area in the Trans-Ural steppe of Chelyabinskaya Oblast. Hay yields fluctuate over a broad range (16-30 quintals per hectare) and, as a result, the structure-building capacity of the grasses is varied. For example, growing perennial grasses on long-cultivated chernozem lands for 4 years made it possible to increase their humus content by 0.1-0.4 percent and the content of converted calcium by 1.9-2.9 milligrams-equivalent per 100 grams of soil in the top 20-centimeter layer.

Growing perennial grasses for 4 years improved the structure of the chernozem soils primarily in aggregates 1-.25 millimeters in diameter. The absolute increase in water-retaining aggregates of 1-3 millimeters and larger was insignificant.

The rate of formation of macro-aggregates (larger than .25 millimeter) was many times higher in the more pulverized topsoil layer (0-20 cm) than in the subsoil layer inasmuch as up to 85 percent of the root system of crop plants is concentrated in the topsoil layer. Vital activity of soil micro-organisms is also more pronounced in the topsoil layer. The higher intake of fresh organic matter which accompanies intensive activity of the soil microflora creates better conditions for structure-building in the topsoil layer than in the subsoil layer.

The top layer (0-10 cm) of the long-cultivated leached, ordinary and southern alkaline chernozem soils had 35.8, 35.1 and 29.1 percent respectively of soil aggregates larger than 125 millimeter in diameter. After 4 years of growing perennial grasses on these soils these percentages were 58.4, 52.3 and 49.5.

Thus perennial grasses in the steppe regions of Chelyabinskaya Oblast play a positive role, not only as a supplement to the feed base of farms, but also as a means of protecting soils from the effects of wind erosion and as one of the ways of increasing the fertility of long-cultivated chernozem soils.

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